

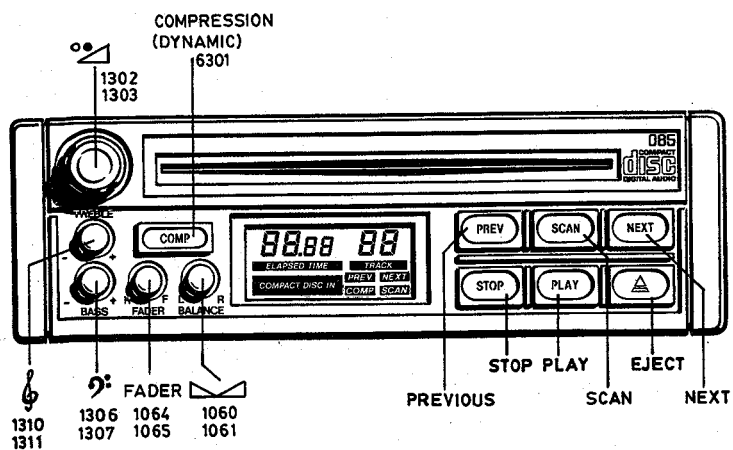
Car compact disc player 22DC085/00

Service
Service
Service

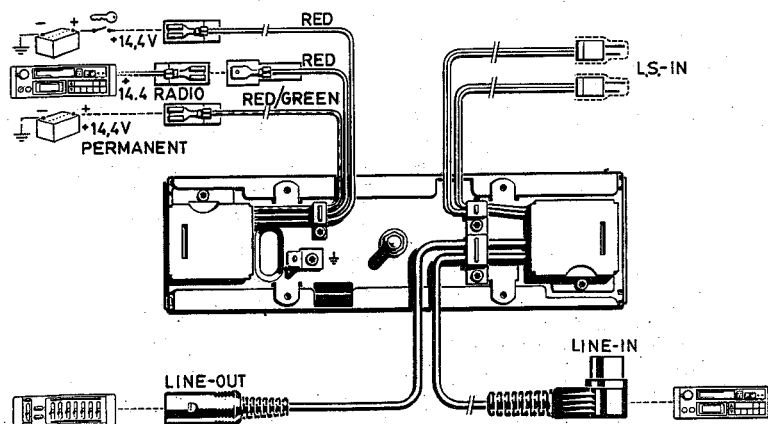
For repairs to the CD mechanism see Service Manual
C.D.M.-3

Service Manual

12 V 



39 688 A12



39 687 A12

**CLASS 1
LASER PRODUCT**

Documentation Technique Service Dokumentation Documentazione di Servizio Huolto-Ohje Manual de Servicio Manual de Servicio



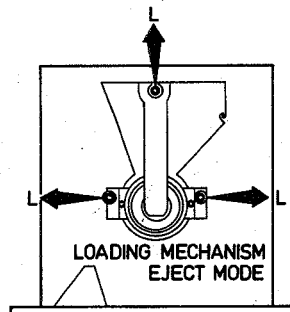
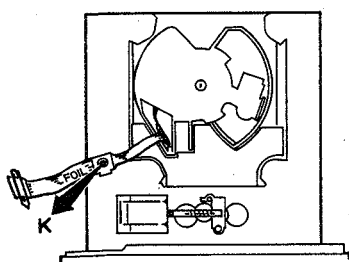
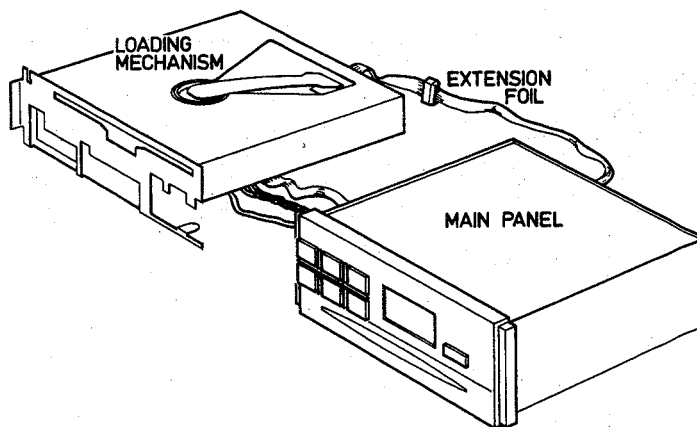
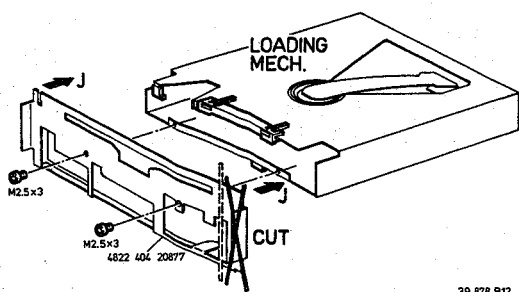
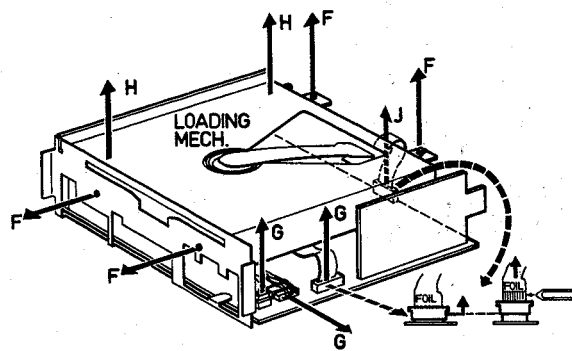
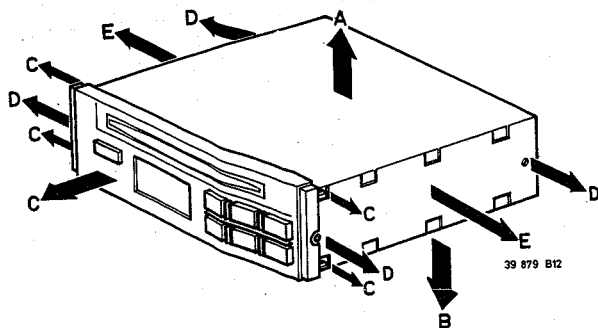
Subject to modification
4822 725 21247 (GB)

Printed in The Netherlands
© Copyright reserved

PHILIPS

Published by
Service Consumer Electronics

CS 5 845



TECHNICAL SPECIFICATION

System : Compact disc digital audio system

Frequency range : 20 Hz – 20 kHz, ± 1 dB

S/N ratio : >80 dB (1 kHz)

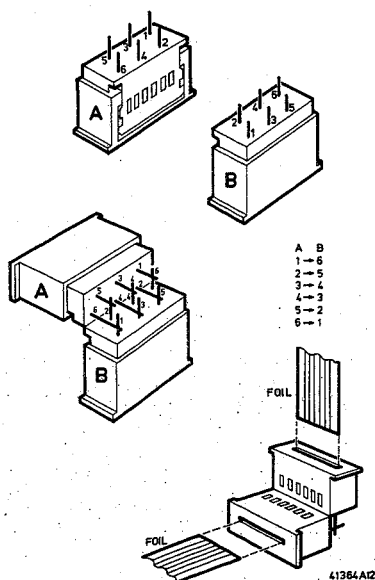
Channel separation : >80 dB (1 kHz)

Total harmonic distortion : <0.01% (1 kHz)

Pre-amplifier:

- Bass : +10 to -10 dB at 40 Hz
- Treble : +10 to -10 dB at 16 kHz
- Balance L/R : 0-40 dB
- Fader Front/Rear : 0-40 dB
- Compressor : 2 dB/1 dB (factor 2)

Dimensions wxhxd : 180 x 51 x 175 mm



REPAIR HINTS

- For repairs to the compact disc mechanism see the Service manual "Compact disc mechanism C.D.M.-3".
- For measurements and adjustments the C.D.M. mechanism has to be put horizontally in the normal play position.
For this operation the set can be put in the Service position as indicated in the decasing drawings, making use of an extra front bracket 4822 404 20877. Service supplies an extension foil consisting of 14 tracks. This foil can be cut up to the correct width (6 tracks). Hereafter it can be soldered to the connector, or the foils can be connected by means of two connectors (see figure).

- In the backplate screws M2.5 x 5 have been applied, while the loading mechanism has been screwed to the front with screws M2.5 x 3. Attention: The screw M2.5 x 5 must not be used to screw the loading mechanism to the front, because in that case the mechanism may get jammed.

SERVICE AUXILIARY TOOLS

Audio test disc no. 3	4822 397 30085
Test disc no. 5 + 5A. Disc without defects (5) + disc with D0-faults, black spots and finger prints (5A)	4822 397 30096
Glass disc	4822 395 90204
Torx screw drivers	
– set straight	4822 395 50145
– set square	4822 395 50132
Extension foil turntable motor	4822 322 40066
Zif connector for extension foil	4822 267 40676
Front bracket for service position	4822 404 20877
Green LED COY9II	5322 130 32182

- To prevent loose metal objects in the CD mechanism, it will be necessary to see to a clean repair station.
- The objective can be cleaned with a blow brush.
- When effecting repairs to, or making measurements on the CD mechanism, be careful not to damage the flat springs of the focusing unit.
- Since laser, monitor diode and photodiodes are very sensitive to static charges, care should be taken that during measurements and adjustments the aids and yourself have a potential that is equal to that of the CD mechanism.

Attention: When exchanging the RAFOC unit, the laser output potentiometer (3213) should be placed in mechanical mid-position to avoid damage to the laser.

Adjusting the laser current

Test point on the main panel.

- Insert test disc 5, 4822 397 30096 (disc without defects).
- Connect a DC voltmeter to test points 1 and 2 (= across resistor 3194).
- Using potentiometer 3213, adjust the laser supply until the voltage across resistor 3194 is $50 \text{ mV} \pm 5 \text{ mV}$.

Power supply

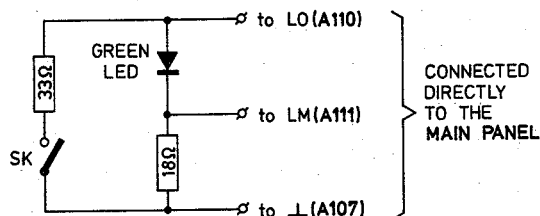
If the set is switched in the STOP position, the supply voltages of the ICs will become 0V owing to the POWER ON indication of the control μC on pin 7. In order to be able to check the supply voltages of the ICs the connector point C460 can be connected to ground, so that the supply remains switched on.

Attention: by pressing the PLAY button, the set starts playing. However it is not possible to stop now.

Check of the laser supply

The laser, the laser supply in IC6055 and the monitor diode form a feedback system. A defect in the laser supply can result in the destruction of the laser.
When, in that case, the laser (=complete RAFOC unit) is replaced, the new laser will also become defective.

On the other hand it is impossible to check and repair a feedback system if one link is missing.
For this reason the laser supply can be checked with the circuit below.
This circuit consists of the laser simulator, the monitor simulator and a switch for checking the control of the laser supply.



39 292 A12

Green LED
e.g. CQY9 II Code number 5322 130 32182

The circuit shown above can be connected to the laser supply in place of the laser, so that the feedback system is closed.

- Take the flexible PCB out of connector A1 on the main panel.
- Connect C460 to ground, so the power supply is switched on.
- Now the voltage on LO (Laser Output pin A110) can be measured to test point 9.
This should be $\geq 3.5 \text{ V}$.
- Connect the simulator circuit to the pins indicated in the above-mentioned figure.
- The lasersupply can be checked with the following measurements: $\text{Si}=0$, test point 21, = play mode)

Switch SK open:

$1.8 \text{ V} \leq \text{LO}$; test point 9 $\leq 2.3 \text{ V}$
 $170 \text{ mV} \leq \text{LM}$; test point 11 $\leq 220 \text{ mV}$
The green LED will light up.

Switch SK closed:

$1.8 \text{ V} \leq \text{LO} \leq 2.3 \text{ V}$
 $170 \text{ mV} \leq \text{LM} \leq 220 \text{ mV}$
The green LED will light up.

When opening the switch SK the LED will shortly light up brighter.

This is caused by the capacitor 2194 on the main panel. The voltage on LM, test point 11, must be identical with switch SK opened and closed.

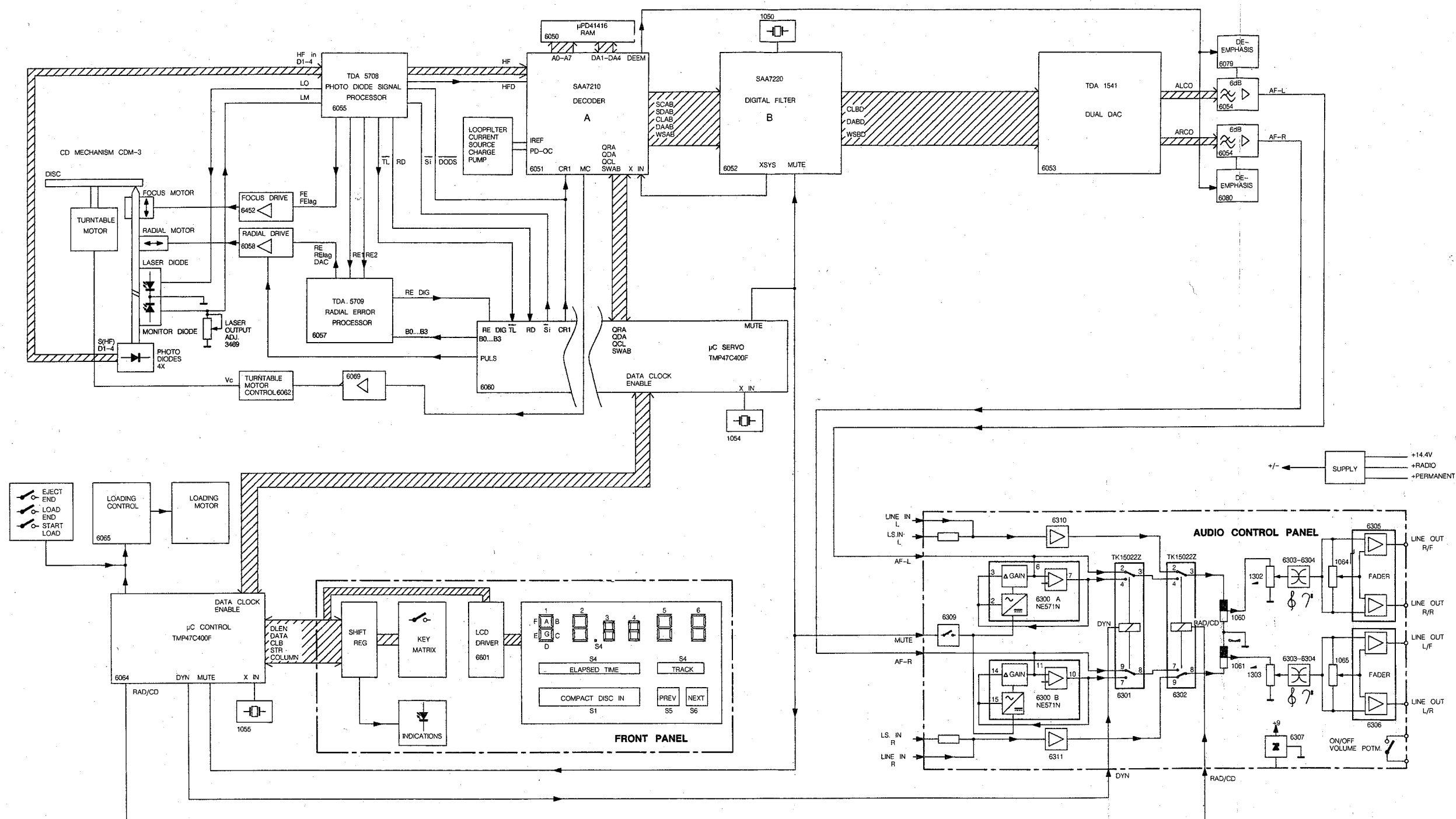
$\text{Si} = 1$; testpoint 21, stop mode

The voltage on LO, test point 9, should be $0 \text{ V} \pm 0.2 \text{ V}$

1. ESD



All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools also at this potential.



PRS 00732
132/629

IC6051 DECODER A (Service position 1)

PIN	VOLTAGE/ SIGNAL	MEAS. POINT	PIN	VOLTAGE/ SIGNAL	MEAS. POINT
1...10	Fig. A1	81 69	28	0.1 V	19
11	N.C.		29	5 V	77
12...16	Fig. A1		30	0.1 V	75
17	Fig. A2		31	5 V	76
18,19	11.2896MHz		32	0.1 V	84
20	0V		33	Fig. A4	78
21	-1.5 V		34	Fig. A5	80
22	2.2 V		35	Fig. A4	79
23	3.6 V		36	4.1 V	74
24	1.6 V		37	0.1 V	73
25	Fig. B	65	38	Fig. A1	72
26	2.7 V	68	39	Fig. A6	71
27	Fig. A3		40	5 V	

IC6052 FILTER B (Service position 1)

PIN	VOLTAGE/ SIGNAL	MEAS. POINT	PIN	VOLTAGE/ SIGNAL	MEAS. POINT
1	Fig. A6	71	12	0 V	86 87 85 90
2	Fig. A1	72	13	0 V	
3	0.1 V	73	14	N.C.	
4	4.1 V	74	15	Fig. A7	
5	N.C.	79	16	5.6MHz	
6	Fig. A4		17	N.C.	
7	Fig. A5	80	18	Fig. A8	
8	N.C.	69	19...21	N.C.	
9	11.2896MHz		22	4.7 V	
10	11.2896MHz		23	0.1 V	
11	11.2896MHz		24	5 V	

IC6055 PHOTO DIODE SIGNAL PROCESSOR (Service position 1)

PIN	VOLTAGE/ SIGNAL	MEAS. POINT	PIN	VOLTAGE/ SIGNAL	MEAS. POINT
1	8 V	3 26,26 4...8 18 22	17	3.3 V	16 23 21 24 19 17
2	0 V		18	6 V	
3	Fig. C		19	2.7 V	
4	*		20	0 V	
5,6	4.8 V		21	9.4 V	
7...10	1.3 V		22	0.7 V	
11	Fig. D		23	1.3 V	
12	Fig. D		24	0 V	
13	*		25	*	
14	2.4 V		26	0.8 V	
15	0 V	11	27	Fig. B	17
16	0.2 V		28	9.5 V	

DO NOT MEASURE THESE PINS

IC6056 OP-AMP FOCUS MOTOR (Service position 1)

PIN	VOLTAGE	MEAS. POINT
1	5 V	28
2	9.6 V	
3	4.7 V	
4	0 V	
5...8	4.8 V	
9...16	N.C.	

IC6057 RADIAL ERROR PROCESSOR (Service position 1 and 2)

PIN	VOLTAGE(V) Sp.1 Sp.2		MEAS. POINT	PIN	VOLTAGE(V) Sp.1 Sp.2		MEAS. POINT
1	1.3	1.3	18	11	0	0	
2	2	2		12	0	5	36
3	Fig.A9	Fig.A9	37	13	4.9	5	34
4	*	*		14	0	5	33
5	*	*		15	0	0	32
6	9.6	9.6		16	1.3	1.3	
7...9	4.8	4.8		17...19	4.8	4.8	
10	4.2	4.8	38	20	1.3	1.3	20

IC6058 OP-AMP RADIAL MOTOR (Service position 1 and 2)

PIN	VOLTAGE(V) Sp.1 Sp.2		PIN	VOLTAGE(V) Sp.1 Sp.2	
1	3.9	4.8	5	4.8	4.8
2	9.6	9.6	6	4.8	4.8
3	6.6	4.5	7	4.5	4.8
4	0	0	8	4.5	4.8

IC6059 OP-AMP RADIAL MOTOR (Service position 1 and 2)

PIN	VOLTAGE(V) Sp.1 Sp.2		PIN	VOLTAGE(V) Sp.1 Sp.2	
1,2,3	N.C.	N.C.	8-9	4.2	4.8
4	9.6	9.6	10	4.2	4.8
5,6	4.8	4.8	11	0	0
7	6.2	6.2	12,13,14	N.C.	N.C.

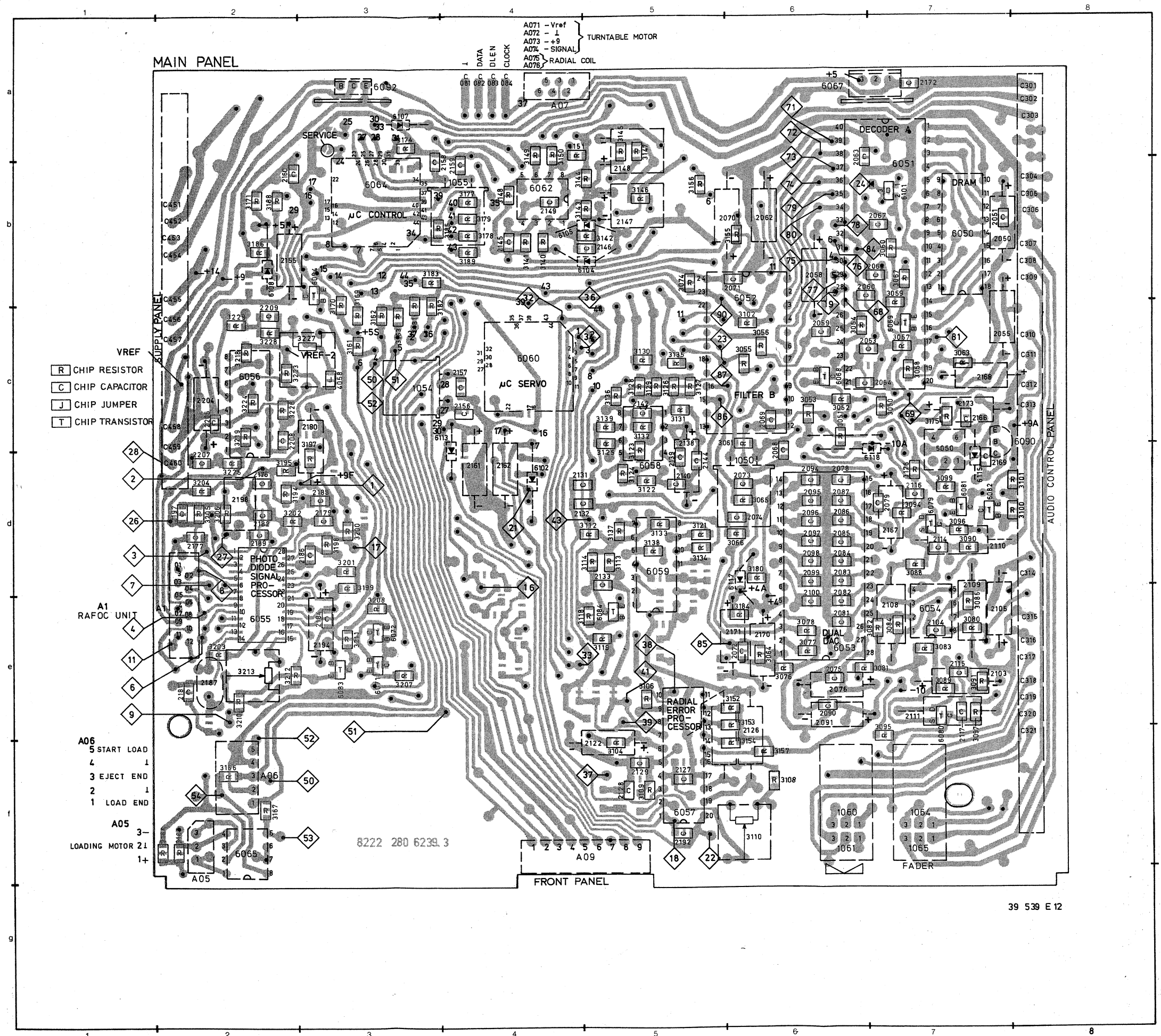
IC6060 μ C SERVO (Service position 1 and 2)

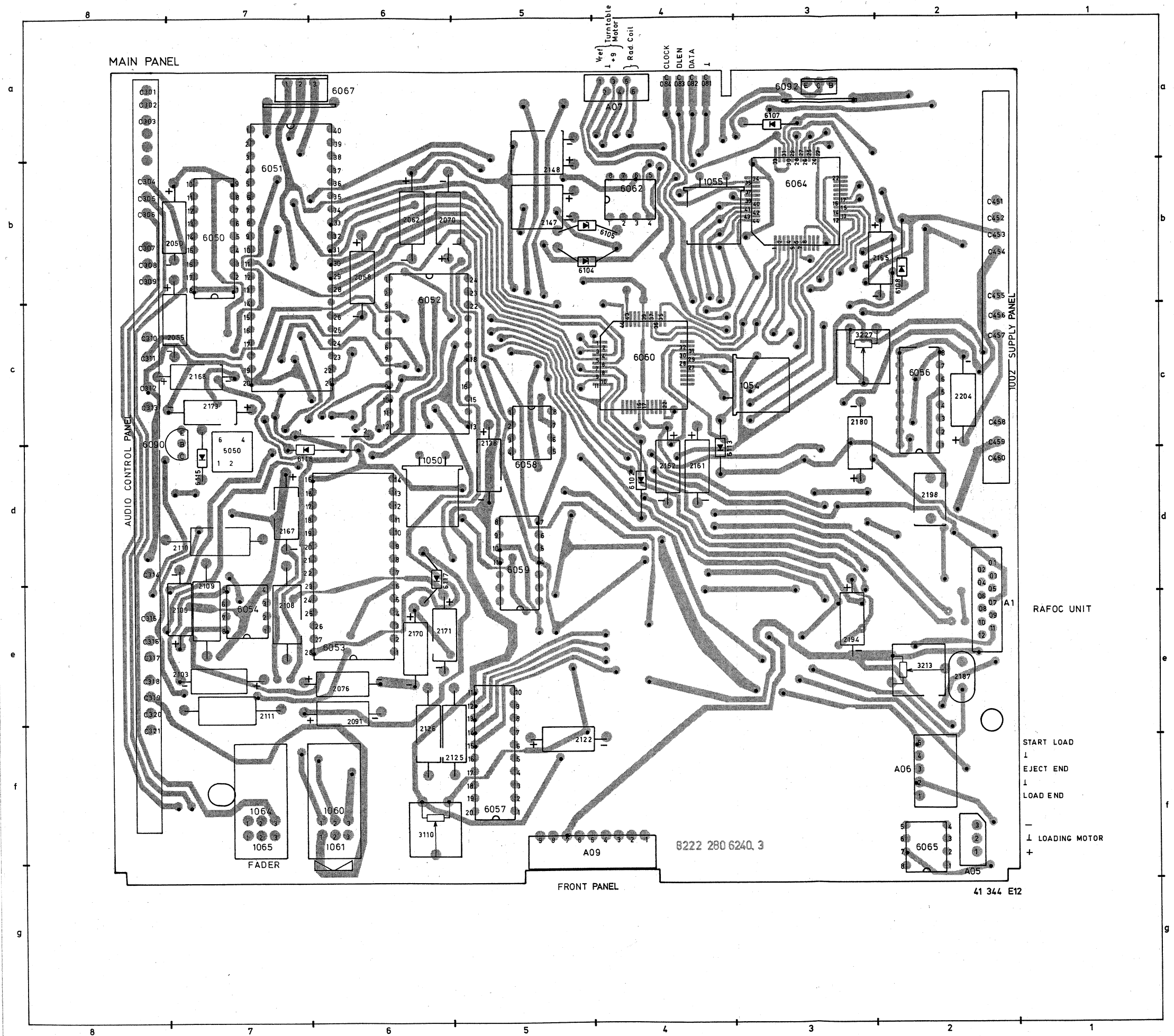
PIN	VOLTAGE(V)/ SIGNAL Sp.1 Sp.2		MEAS. POINT	PIN	VOLTAGE(V)/ SIGNAL Sp.1 Sp.2		MEAS. POINT
1	5	5	34	28	4MHz	4MHz	
2	0	5	33	29	4.8	4.8	
3	0	0	32	30	4.8	4.8	
4	0	3.2	75	31	6	9.5	16
5,6	5	5	77,76	32	Fig.A10	Fig.A10	37
7	0	0	21	33,34	N.C.	N.C.	
8	Fig.A4	Fig.A4	78	35	5	5	
9	0	5.3	19	36	5	5	
10	9.6	9.6	43	37	5	5	
11	9.4	9.4	24	38	N.C.	N.C.	
12...15	N.C.		39	5	5		
16	0	0		40...42	N.C.	N.C.	
17	4.9	4.9		43	0	4.2	
18...26	N.C.		44	0	5	36	
27	4MHz	4MHz					

TS 6068 S.p.1	TS6069 S.p.1	TS 6071 S.p.1
E 8.6 V	E 0 V	E -0.5 V
B 7.9 V	B 0.5 V	B 0 V
C 3.6 V	C 3.5 V	C -0.5 V

TS 6083 S.p.1	TS 6084 S.p.1	TS 6101 S.p.1
E 2.5 V	E 4.8 V	1 2.7 V
B 3.2 V	B 9.6 V	2 3.5 V
C 4.4 V	C 4.8 V	3 9.4 V

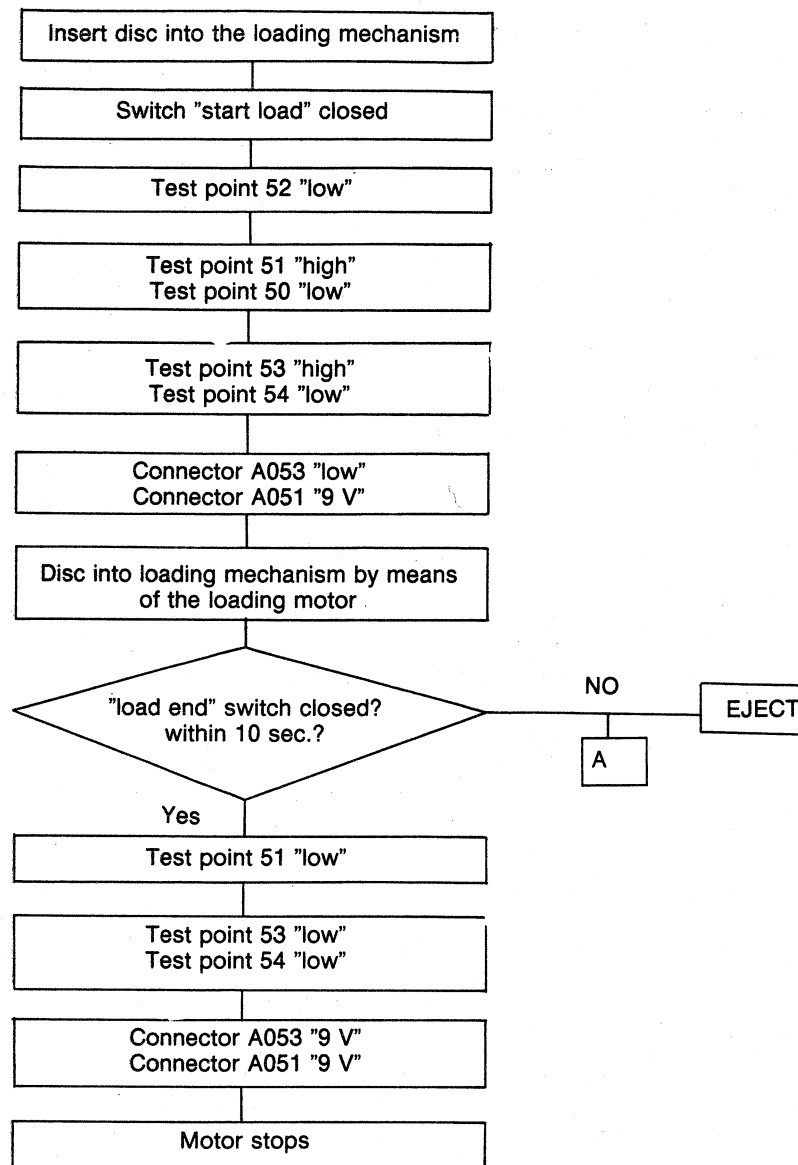
A01 E2	2180 D3	3161 C3
A05 F2	2181 E2	3162 C3
A06 F2	2182 D2	3163 C3
A07 A4	2184 E3	3164 F2
A09 F5	2186 D3	3166 F2
1050 D6	2187 E2	3167 F2
1054 C3	2188 D3	3168 F2
1055 B4	2189 D2	3169 B3
1060 F6	2192 F5	3170 B3
1061 F6	2194 E3	3171 B2
1064 F7	2197 D2	3174 A3
1065 F7	2198 D2	3175 C7
2050 B7	2204 C2	3176 D7
2051 B7	2205 C2	3177 B4
2053 C6	2207 D2	3178 B4
2055 C7	2208 C2	3179 B4
2058 B6	2209 C2	3180 D6
2059 C6	3050 C7	3181 C3
2060 B6	3051 C6	3182 C3
2062 B6	3052 C6	3183 B3
2063 A6	3053 C6	3184 E6
2064 C7	3054 C6	3185 B4
2066 B7	3057 C7	3186 B2
2067 B7	3058 C7	3188 B2
2068 D6	3059 B7	3189 B4
2069 C6	3060 B7	3194 D2
2070 B6	3061 C6	3197 D2
2071 B6	3063 C7	3198 D3
2072 B6	3064 E6	3199 D3
2073 D6	3065 D6	3200 D3
2074 D6	3066 D6	3201 D3
2075 E6	3067 B7	3202 D2
2076 E6	3074 B5	3203 E2
2078 D6	3076 E6	3204 D2
2079 D7	3077 E6	3205 D2
2081 E6	3078 E6	3206 D2
2082 E6	3080 B7	3207 E3
2083 D6	3081 E7	3208 E3
2084 D6	3082 E7	3210 E2
2085 D6	3083 E7	3211 E3
2086 D6	3084 E7	3212 E2
2087 D6	3085 E7	3213 E2
2090 E6	3088 D7	3218 C2
2091 E6	3089 E7	3219 C2
2094 D6	3090 D7	3223 C2
2095 D6	3091 E7	3224 C2
2096 D6	3094 D7	3225 D2
2097 D6	3095 E7	3226 C2
2098 D6	3096 D7	3227 C3
2099 D6	3097 E7	3228 C2
2100 E6	3099 D7	3229 C2
2103 E7	3100 D7	4051 E5
2104 E7	3101 D7	4056 C4
2105 E7	3102 C6	4058 C3
2108 E7	3104 F5	5050 D7
2109 E7	3108 F6	6050 B7
2110 D7	3109 F5	6051 B7
2111 E7	3110 F6	6052 B6
2114 D7	3112 D5	6053 E6
2115 E7	3113 D5	6054 E7
2116 D7	3114 D5	6055 E2
2117 E7	3118 E5	6056 C2
2122 F5	3119 E5	6057 F5
2123 E5	3121 D5	6058 C5
2125 E5	3122 D5	6059 D5
2126 E6	3123 D5	6060 C4
2127 F5	3124 D5	6062 B4
2128 F5	3125 C5	6064 B3
2129 F5	3126 C5	6065 F2
2131 D5	3127 C5	6067 A6
2132 D5	3128 C5	6068 C6
2133 D5	3129 C5	6069 C7
2138 C5	3130 C5	6071 E3
2139 D5	3131 C5	6072 E3
2140 D5	3132 C5	6079 D7
2142 C5	3133 D5	6080 E7
2144 D5	3134 D5	6081 D7
2145 B4	3135 C5	6082 D7
2146 B5	3136 C5	6083 E3
2147 B5	3137 D5	6084 E5
2148 B5	3138 D5	6090 C7
2149 B4	3139 C5	6092 A3
2155 B2	3140 B4	6094 B3
2156 C4	3141 B4	6097 C6
2157 C4	3142 B5	6101 B7
2158 B4	3143 B4	6102 D4
2159 B4	3144 B4	6104 B5
2160 B2	3145 A5	6105 B4
2161 C4	3146 B5	6107 A3
2162 D4	3147 A5	6108 B2
2166 C7	3148 B4	6113 D4
2167 D7	3149 A4	6115 D7
2169 D7	3150 A4	6117 D6
2170 E6	3151 A4	6118 D7
2171 E6	3152 E6	
2172 A7	3153 E6	
2173 C7	3154 F6	
2176 D2	3155 B6	
2177 D2	3156 B5	
2179 D3	3157 F6	





SEQUENCE DIAGRAM OF THE MEASURING POINTS AND SWITCHES IN THE "LOADING MECHANISM"

LOAD



A

Remark:

- The time needed for loading a disc under normal conditions is 1.5 sec. Under extreme conditions this time may become considerably longer. If the loading after 10 sec. has not yet been finished, the control μ C will order to eject.

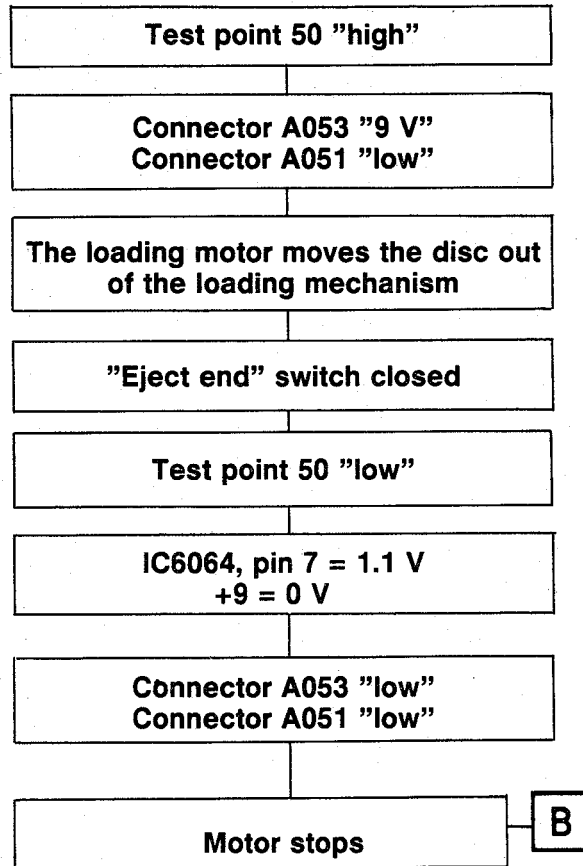
Conclusion:

- Eject within 10 sec.: there is something wrong in the focus or laser circuit, see chapter "Service test programme".
- Eject after 10 sec.: there is something wrong in the loading mechanism.
- If the "load end" switch has been interrupted, the loading mechanism may get jammed and eject is not

possible. The display shows "Err". It may be tried to start anew by pressing the PLAY button. If starting is not possible, give an eject command and turn the toothed wheels at the same time, so that the disc comes out of the loading mechanism. If the "load end" switch has been interrupted, the indication "compact disc in" will not light up.

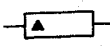
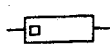
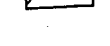
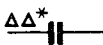
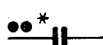
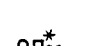
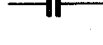
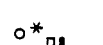
- If the "load end" switch has been short-circuited, it is not possible to load a disc. If it is tried to load a disc, the indication "compact disc in" will light up immediately.

EJECT



B

Remark: if the "eject end" switch is interrupted, the motor will be stopped but it is not possible to load the disc again.
If the "eject end" switch is short-circuited, it is not possible to eject the disc.

 Carbon film 0.2 W 70°C 5%  Carbon film 0.33 W 70°C 5%  Metal film 0.33 W 70°C 5%  Carbon film 0.5 W 70°C 5%  Carbon film 0.67 W 70°C 5%  Carbon film 1.15 W 70°C 5%	 Ceramic plate Tuning ≤ 120 pF NP.0 2% Others —20/+80%  Polyester flat foil 10%  Metalized polyester flat film 10%  Polyester flat foil small size (Mylar) 10%  Polysterene film/foil 1%  Tubular ceramic  Miniature single  Subminiature tantalum ± 20%	*a = 2,5 V b = 4 V c = 6,3 V d = 10 V e = 16 V f = 25 V g = 40 V h = 63 V j = 100 V l = 125 V m = 150 V n = 160 V q = 200 V r = 250 V s = 300 V t = 350 V u = 400 V v = 500 V w = 630 V x = 1000 V A = 1,6 V B = 6 V C = 12 V D = 15 V E = 20 V F = 35 V G = 50 V H = 75 V I = 80 V
© Chip component		

IC6053 DUAL DAC (Service position 1)

PIN	VOLTAGE/ SIGNAL	PIN	VOLTAGE/ SIGNAL
1	6.8 V	15	-10.8 V
2	6.7 V	16,17	-5.8 V
3	6.3 V	18	-2.9 V
4	6.7 V	19	-3.0 V
5,6	4.8 V	20	-0.7 V
7	1.4 V	21	-0.5 V
8	1.0 V	22	0.9 V
9	0.9 V	23	0.9 V
10	-0.5 V	24	1.4 V
11	-0.7 V	25	4.8 V
12	-2.9 V	26	0 V
13	-2.7 V	27	9.6 V
14	4.8 V	28	9.6 V

**IC 6054 PRE-AMP
S.p.1**

PIN	VOLTAGE(V)
1	5.3
2	4.8
3	4.8
4	0
5	4.8
6	4.8
7	5.3
8	9.1

**IC 6062 O/A TURNT. MOTOR
S.p.1**

PIN	VOLTAGE(V)
1	5.9
2	4.8
3	4.7
4	0
5	4.8
6	4.8
7	4
8	9.6

IC 6064 μ C CONTROL S.p.1

PIN	VOLTAGE(V)	PIN	VOLTAGE(V)
1	4.9	25,26	N.C.
2	4.9	27	4MHz
3	N.C.	28	4MHz
4	0	29	5
5	0	30	5
6	0	31	0
7	0	32	N.C.
8	4.8	33	5
9...11	N.C.	34	2.5
12	0	35	0
13	4.7	36	N.C.
14	2.4	37	0
15	2.1	38	N.C.
16	0	39	5
17	5	40	0
18...21	N.C.	41	5
22	5	42	0
23	5	43	0
24	0 V	44	5

IC 6065 S.p.1

PIN	VOLTAGE(V)
1	9.2
2	9.6
3	9.2
4,5	0
6,7	2.8
8	0

**TS6067 STABILIZER
S.p.1**

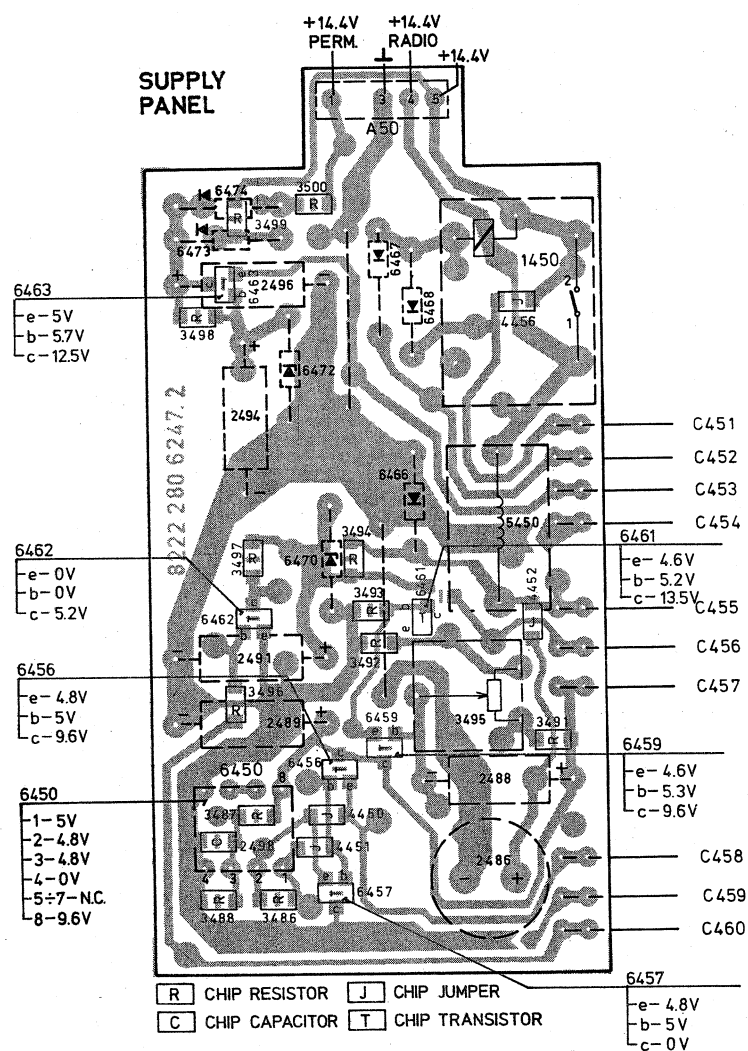
1	9.6 V
2	0 V
3	5 V

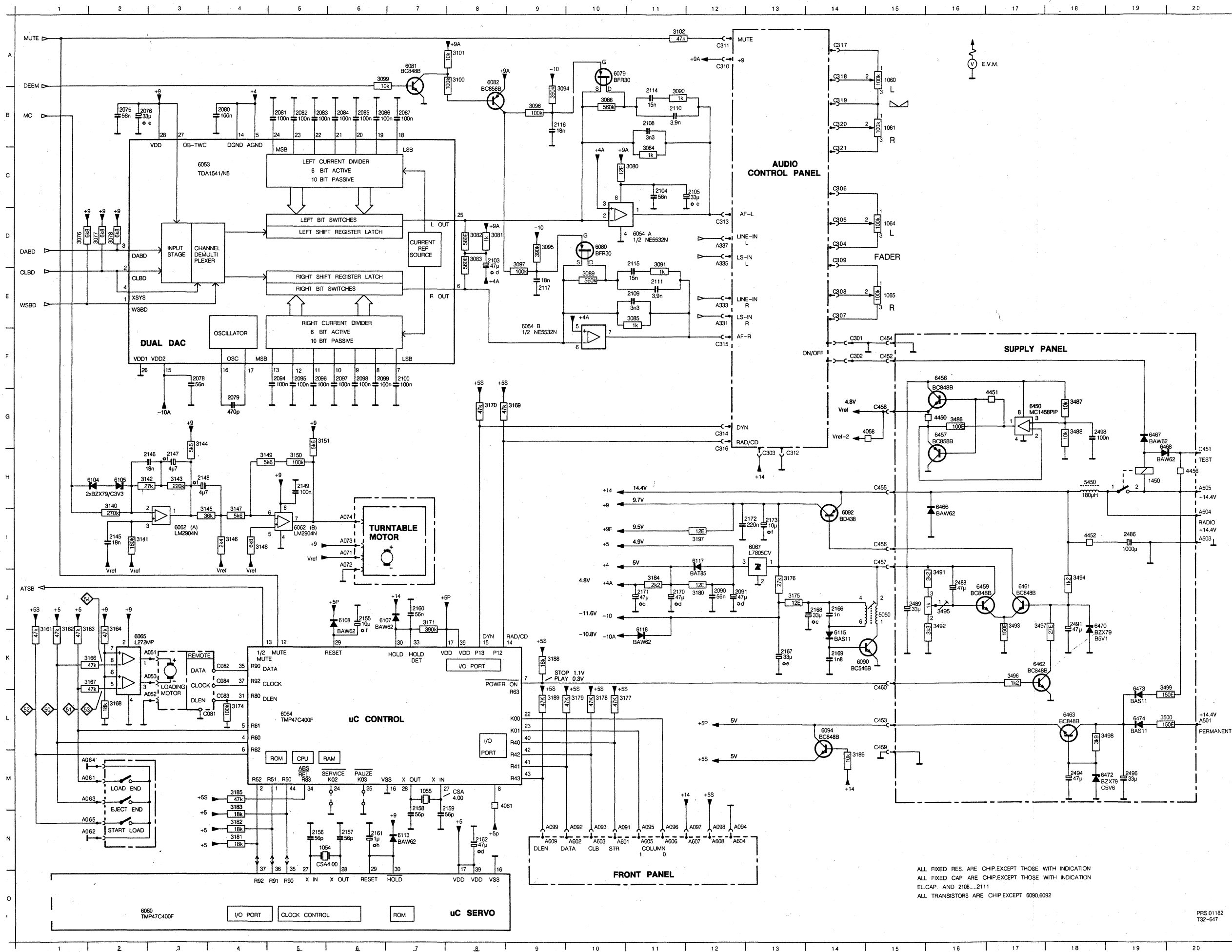
TS 6079 S.p.1	TS 6080 S.p.1	TS 6081 S.p.1	TS 6082 S.p.1
G -11.3 V D 4.5 V S 4.8 V	G -11.3 V D 4.5 V S 4.8 V	E 0 V B 0.1 V C 9.2 V	E 9.2 V B 9.1 V C -11.3 V

TS 6090 S.p.1	TS 6092 S.p.1	TS 6094 S.p.1
E 0 V B -0.9 V C 9.4 V	E 14.2 V B 13.5 V C 9.7 V	E 5 V B 5.7 V C 5 V

**SUPPLY
S.p.1**

Vref	4.8 V
Vref-2	4.8 V
+ 4	4.8 V
+ 4A	4.8 V
+ 5	5 V
+ 5P	5 V
+ 5S	5 V
+ 9	9.7 V
+ 9A	9.2 V
+ 9F	9.5 V
- 10	-11.6 V
- 10A	-10.8 V
+ 14	14.1 V





ALL FIXED RES. ARE CHIP EXCEPT THOSE WITH INDICATION
 ALL FIXED CAP. ARE CHIP EXCEPT THOSE WITH INDICATION
 EL CAP. AND 2108...2111
 ALL TRANSISTORS ARE CHIP EXCEPT 6090, 6092

PRS 01182
 T32-647

1054	N	6	6053	C	4
1055	M	7	6054	E	9
1060	A	15	6054	D	11
1061	B	15	6060	O	3
1064	D	15	6062	I	5
1065	E	15	6062	I	5
1450	H	19	6092	I	14
2075	B	2	6065	K	2
2076	B	3	6067	I	13
2078	F	3	6079	A	10
2079	G	4	6080	D	10
2080	B	4	6081	A	7
2081	B	5	6082	A	8
2082	B	5	6090	K	15
2083	B	6	6092	I	14
2084	B	6	6094	L	14
2085	B	6	6104	H	2
2086	B	7	6105	H	2
2087	B	7	6107	J	7
2090	J	12	6108	J	6
2091	J	13	6113	N	7
2094	F	5	6115	K	14
2095	F	5	6117	I	12
2096	F	6	6118	J	11
2097	F	6	6450	G	17
2098	F	6	6456	F	16
2099	F	7	6457	G	16
2100	F	7	6459	J	17
2103	D	8	6461	J	17
2104	C	11	6462	K	17
2105	C	12	6463	L	18
2108	B	11	6465	H	16
2109	E	11	6467	G	19
2110	B	11	6468	G	20
2111	E	11	6470	J	19
2114	B	11	6472	M	19
2115	D	11	6473	K	19
2116	B	9	6474	L	19
2117	E	9			
2145	I	2			
2146	H	3			
2147	H	3			
2148	H	4			
2149	H	4			
2155	J	6			
2156	N	5			
2157	N	6			
2158	M	8			
2159	M	8			
2160	J	7			
2161	N	6			
2162	N	8			
2166	J	14			
2167	K	13			
2168	J	14			
2169	K	14			
2170	J	11			
2171	J	11			
2172	I	13			
2173	I	13			
2486	I	19			
2488	J	16			
2489	J	15			
2491	J	18			
2494	M	18			
2496	M	19			
2498	G	19			
3076	D	1			
3077	D	2			
3078	D	2			
3080	C	11			
3081	D	8			
3082	D	8			
3083	D	8			
3084	C	11			
3085	E	11			
3086	B	10			
3089	E	10			
3090	B	11			
3091	D	11			
3094	B	10			
3095	D	9			
3096	B	9			
3097	D	9			
3099	A	6			
3100	A	8			
3101	A	8			
3102	A	11			
3140	H	2			
3141	I	3			
3142	H	3			
3143	H	3			
3144	G	4			
3145	H	4			
3146	I	4			
3147	H	4			
3148	I	5			
3149	H	5			
3150	H	5			
3151	G	6			
3161	J	1			
3162	J	2			
3163	J	2			
3164	J	2			
3166	K	2			
3167	K	2			
3168	L	2			
3169	G	9			
3170	G	8			
3171	J	7			
3174	L	4			
3175	J	13			
3176	J	13			
3177	L	11			
3178	L	10			
3179	L	10			
3180	J	12			
3181	N	4			
3182	N	4			
3183	M	4			
3183	M	4			
3184	J	11			
3185	M	4			
3186	M	4			
3188	K	9			
3189	L	9			
3197	J	12			
3485	G	16			
3487	G	18			
3488	G	18			
3491	J	16			
3492	J	16			
3493	J	17			
3494	J	18			
3495	J	16			
3496	K	17			
3497	J	18			
3498	L	19			
3499	K	20			
3500	L	20			
4058	G	15			
4061	M	9			
4451	G	16			
4451	G	17			
4452	I	18			
4456	H	20			
5050	J	15			
5450	H	18			

6307

1	9.3V
2	1.2V
3	14.4V

6305

1	5.2V
2	5.2V
3	5.2V
4	0V

6306

1	5.2V
2	5.2V
3	5.2V
4	0V

6309

STOP-PL
-e-0V-0V
-b-0V-0.
-c-6.6V-0

6301 (DYN ")

1	2V
2	4V
3	4V
4	4V
5	0V

6302

1	2V
2	4V
3	4V
4	4V
5	0V



AUDIO CONTROL PANEL

01 - LS (L)
02 - LLS (L)
03 - LINE IN (R)
04 - LLINE IN
05 - LINE IN (L)
06 - LLS (R)
07 - LS (R)

08 - LINE OUT (R.F)
09 - LINE OUT (R.R)
10 - LLINE OUT
11 - LINE OUT (L.F)
13 - LINE OUT (L.R)
14 - +14V IN

6307

1-9.3V
2-1.2V
3-14.4V

C301
C302
C303

6305

1-5.2V 5-5.2V
2-5.2V 6-5.2V
3-5.2V 7-5.2V
4-0V 8-9.3V

C304
C305
C306

6306

1-5.2V 5-5.2V
2-5.2V 6-5.2V
3-5.2V 7-5.2V
4-0V 8-9.3V

C307
C308
C309

6309

STOP-PLAY
e-0V-0V
b-0V-0.7V
c-6.6V-0V

C312
C313

C310
C311

6310

e-2.4V
b-3V
c-6V

6311

e-2.4V
b-3V
c-6V

6301 (DYN "ON")

1-2V 6-8V
2-4V 7-4V
3-4V 8-4V
4-4V 9-4V
5-0V 10-2V

C314

C315

6302

1-2V 6-8V
2-4V 7-4V
3-4V 8-4V
4-4V 9-4V
5-0V 10-2V

C316
C317
C318
C319
C320
C321

6300

1-1.3V 9-1.9V
2-1.8V 10-4.6V
3-1.8V 11-1.9V
4-0V 12-1.9V
5-1.9V 13-9.3V
6-1.9V 14-1.9V
7-4.6V 15-1.9V
8-1.9V 16-1.3V

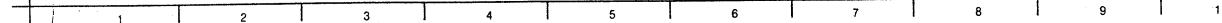
6304

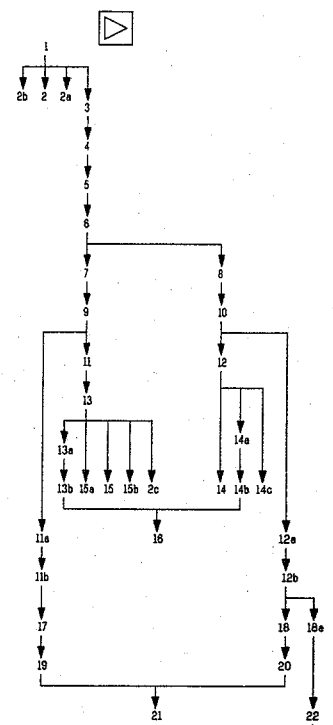
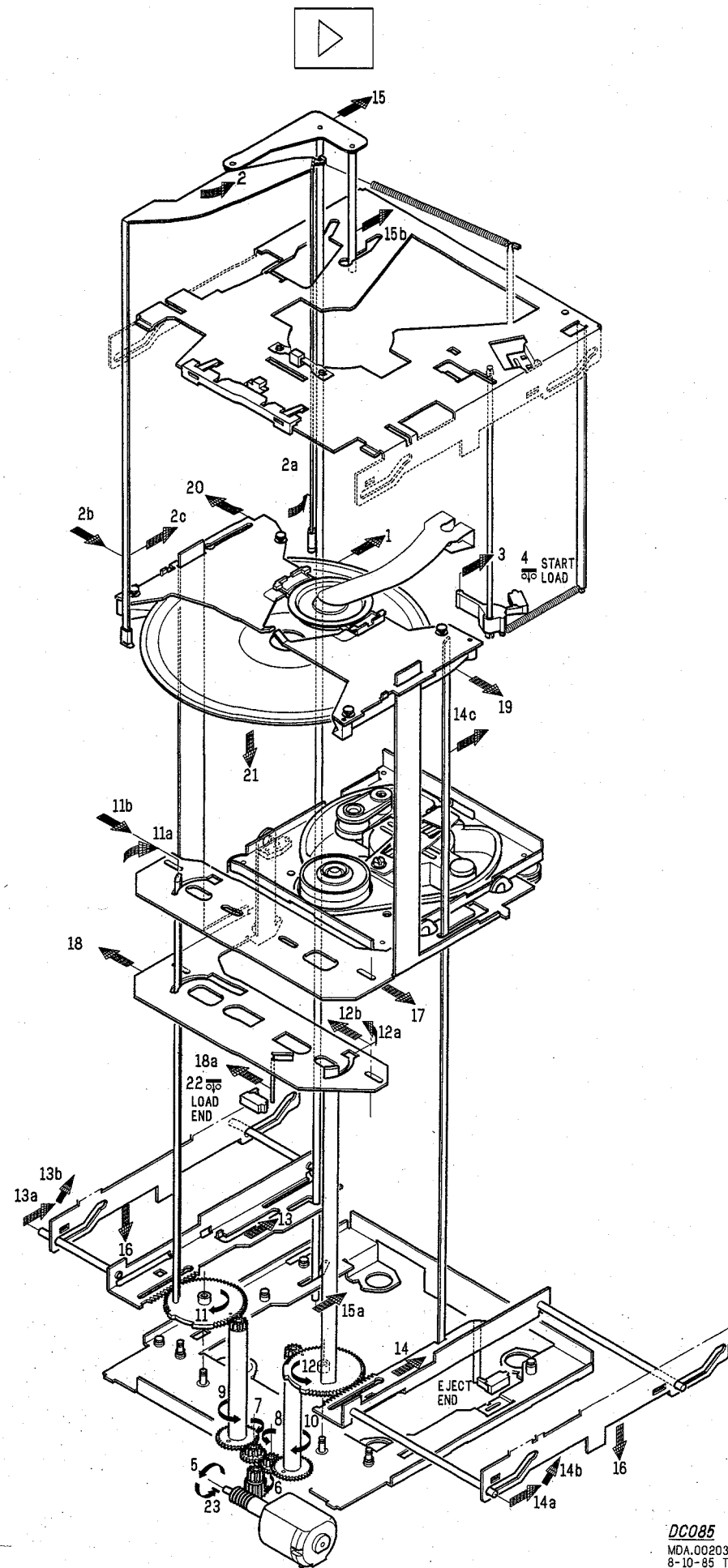
1-5.2V 5-5.2V
2-5.2V 6-5.2V
3-5.2V 7-5.2V
4-0V 8-9.3V

6303

1-5.2V 5-5.2V
2-5.2V 6-5.2V
3-5.2V 7-5.2V
4-0V 8-9.3V

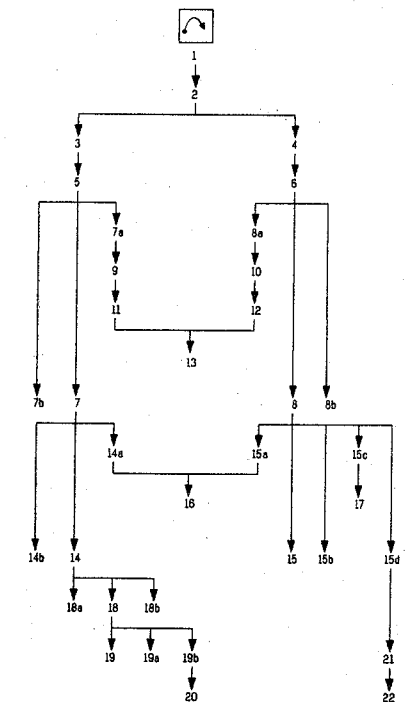
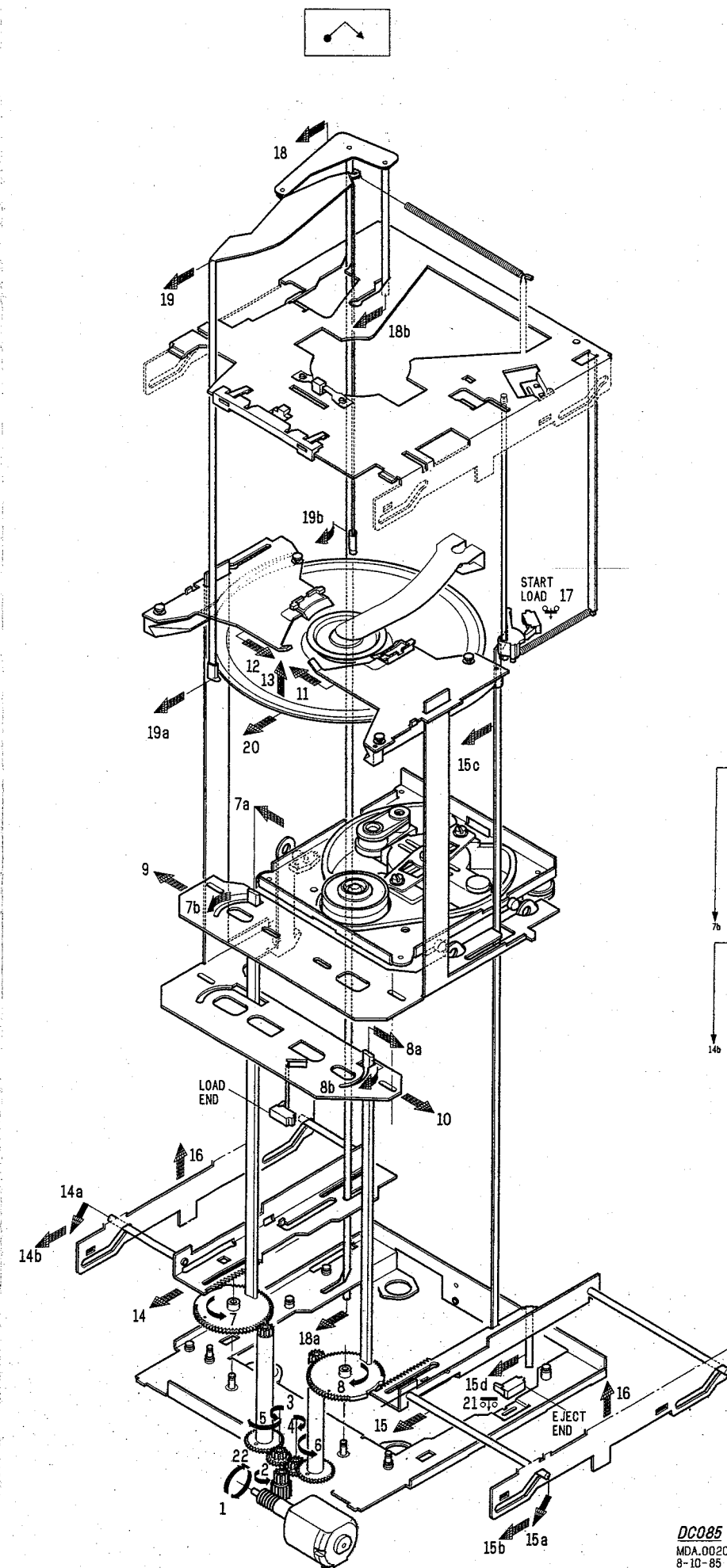
1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	----





PRS.00788
T02-541

DC085
MDA.00203
8-10-85 T22



PRS.00800
T32-542

DC085
MDA.00209
8-10-85 T22

● Check the SWAB/SSM signal (test point 78; pin 33) = Start-Stop turntable motor

- Motor start pulse when test point 78 is "high" for ≥ 0.2 sec.
- Motor stop pulse when test point 78 is "low" for ≥ 0.2 sec.

Note:

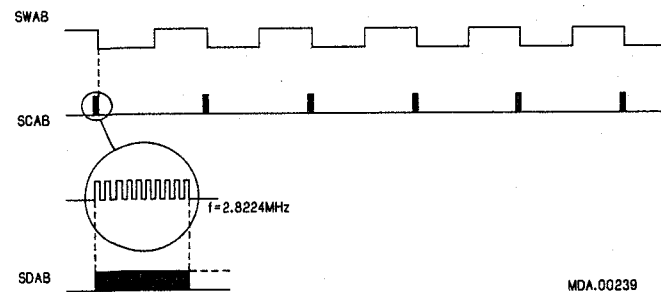
After the motor start pulse, SWAB information (Subcoding Word clock) will become visible at this point. The period time of that signal is 136 μ sec.

● Check the subcode clock signals

- Insert a disc.
- Trigger the oscilloscope on the SWAB signal at test point 78.
- Check the following signals:
SWAB at test point 78; pin 33
SCAB at test point 79; pin 35 (Subcode Clock from Decoder-A to Filter B)
SDAB at test point 80; pin 34 (Subcode Data from Decoder-A to Filter B)
and their interrelations.

Note:

While the burst of 10 clock pulses, appear on SCAB the Q-channel information is transferred on SDAB. Hereafter the P-bit indication follows. The P-bit is "high" between two bursts of 10 clock pulses in case of pause indication and "low" in case of music indication.



● Check the CRI/DODS signal (test point 19; pin 28)

The CRI signal is "low" in case of track jumping. Player in position "NEXT" and "PREV."

● Check the DEEM signal (test point 84; pin 32)

- Insert test disc 5.
- During playback of track no. 14 (recorded without PRE-EMPHASIS), the DEEM signal should be "low".
- During playback of track no. 15 (recorded with PRE-EMPHASIS), the DEEM signal should be "high".

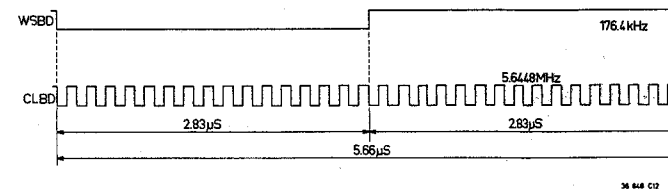
FILTER-B IC6052

● Check the signals between Decoder-A IC and Filter-B IC

- See "Decoder-A IC":
* Check the X IN signal (test points 69 and 70)
* Check the timing signals meant for Filter B (WSAB, CLAB, DAAB signals; test points 71, 72 and 73).
* Check the EFAB signal (test point 74)
* Check the subcode clock signals (SWAB, SCAB, SDAB signals; test points 78, 79 and 80).

● Check the timing signals between Filter-B IC and DAC IC

- Insert a disc.
 - Trigger the oscilloscope on the WSBD signal (Word Select from Filter B to DAC) test point 85 (pin 18).
- Check the following signals:
WSBD at test point 85; pin 18
CLBD at test point 87; pin 16 (Clock signal from Filter B to DAC) and their interrelation.
If an Audio disc is used, there should be activity at test point 86 (pin 15) DABD signal (DATA from Filter B to DAC).



● Check the MUSB signal test point 90; pin 23 (Soft Mute)

This signal is "low" in positions:

- STOP
- NEXT or PREVIOUS when jumping from one track to another.

DAC IC6053 (Dual Digital Analog Converter)

● Check the signals between Filter-B IC and DAC IC

- See sub. "Filter-B IC":
* Check the timing signals between Filter-B IC and DAC IC.

● Check the output of OP-AMP 6054

- Insert a disc.
- In position PLAY or in SERVICE POSITION 2, the analog (music) signal should be present at the output of OP-AMP 6054 (pin 1, 7), after the lead-in track has been read.

DEEM CIRCUIT

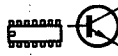
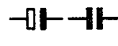
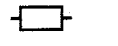
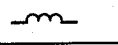
● Check DEEM circuit

- Insert test disc 5.
- During playback of track no. 14 (recorded without PRE-EMPHASIS) the DEEM signal at test point 84 should be "low".
- During playback of track no. 15 (recorded with PRE-EMPHASIS), the DEEM signal at test point 84 should be "high".
- During playback of track no. 14 the analogue signal should be present at the drain of 6079 and 6080.
- During playback of track no. 15 the analogue signal at the drain of 6079 and 6080 should be 0 V.

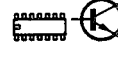
Main panel

6050	UPD41416-20	5322 209 82903
6051	SAA7210P/04	4822 209 71001
6052	SAA7220	4822 209 11157
6053	TDA1541/N5	4822 209 70295
6054	LM833N	4822 209 83163
6055	TDA5708T	4822 209 70183
6056	L272B	4822 209 70373
6057	TDA5709	4822 209 83203
6058	L272MP	4822 209 70369
6059	LM2902N	4822 209 70371
6060	TMP47C400F	
	SERVO4	4822 209 71558
6062	LM2904N	4822 209 82115
6064	TMP47C400F	
	CONTROL4	4822 209 11393
6065	LM272MP	4822 209 70369
6067	L7805CV	4822 209 80817
BF550		4822 130 42131
BSV52		5322 130 44336
BC848B		5322 130 41982
BFR30		5322 130 44343
BC858B		5322 130 41983
BC546B		4822 130 44461
BD438		4822 130 40995
BAW62		4822 130 30613
BAV70		5322 130 43331
BZX79/C3V3		5322 130 31504
BAS11		4822 130 41273
BAT85		4822 130 31983
2050,2062,2070,	47 μ F 10 V	4822 124 20678
2091,2103,2162,		
2170,2171		
2055	3.3 μ F 63 V	4822 124 20725
2155,2173	10 μ F 25 V	4822 124 20697
2058,2161	1 μ F 63 V	4822 124 20722
2076,2105,2122,	33 μ F 16 V	4822 124 20688
2138,2167,2168,		
2180,2194,2204		
2147,2148	4.7 μ F 25 V	4822 124 10367
2187	470 nF 10%	4822 121 42008
2198	1000 nF 63 V 10%	4822 121 42731
2108,2109	3.3 nF 2%	4822 121 42733
2110,2111	3.9 nF 2%	4822 121 42732
2125,2126	1.8 nF 1%	4822 121 51048
3053	560 Ω 5%	4822 110 73101
3110,3227	Trimpt. 100K	4822 100 90056
3213	Trimpt. 1K	4822 100 90057
1060	Potm. balance	4822 100 20532
1064	Potm. fader	4822 100 20533
5050	coil	4822 156 21391
Miscellaneous		
1050	X-tal 11.2896 MHz	4822 242 71349
1054,1055	Reson. CSA	
	4.00MG	4822 242 70831

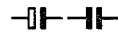
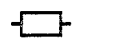
Supply panel

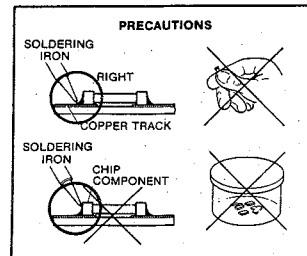
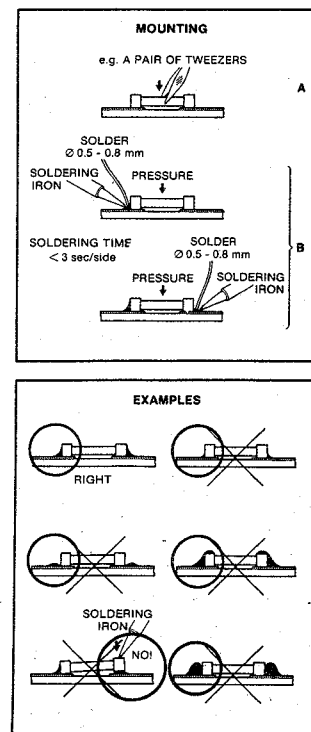
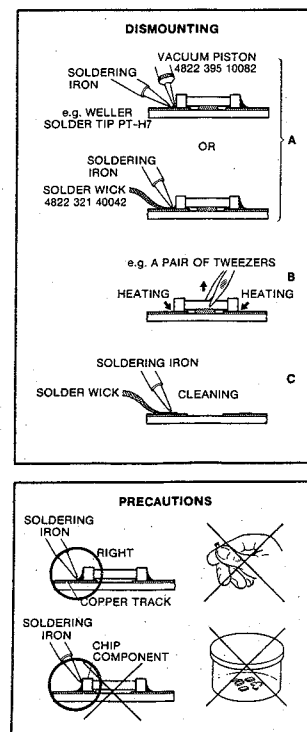
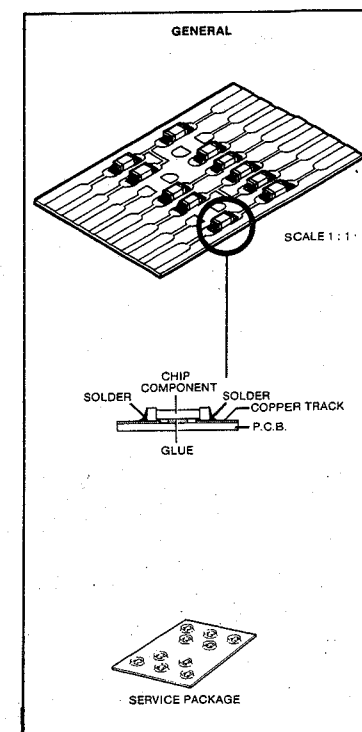
		
6450	MC1458P1P	4822 209 11346
BC848B		5322 130 41982
BC858B		5322 130 41983
BAW62		4822 130 30613
BZX79/C5V6		4822 130 43173
BAS11		4822 130 41273
		
2486	1000 µF 16 V	4822 124 40201
2488,2491,2494	47 µF 10 V	4822 124 20678
2489,2496	33 µF 16 V	4822 124 20688
		
3495	Trimpot. 1K	4822 100 11057
		
1450	Relay	4822 280 70319
5450	Coil	4822 156 21109

Front panel

		
6600	HEF4094BT	5322 209 11306
6601	PCF2111T	5322 209 82942
Miscellaneous		
1605,1606,1608	Lamp 14 V 40 mA	4822 134 40817
1607	Lamp 14 V 100 mA	4822 134 40818
	Cap on lamp	4822 381 10876

Audio control panel

		
6300	NE571N	4822 209 70368
6303	LM833N	4822 209 83163
6307	MC78L08ACP	4822 209 11345
6301-6302	TK15022Z	4822 209 11394
		
BC848B		5322 130 41982
BFS19		4822 130 42353
		
BAW62		4822 130 30613
		
2300+2303,2350,		
2351,2354,2355,	3.3 µF 50 V	4822 124 21415
2361		
2306,2307	68 µF 6.3 V	4822 124 20671
2316,2326	10 µF 16 V	4822 124 21108
2317,2338	10 µF 25 V	4822 124 20697
2336,2337	47 µF 10 V	4822 124 20678
2344,2345	3.3 µF 63 V	4822 124 20725
2362,2398,2402	47 µF 10 V	4822 124 21483
2380,2381,		
2392+2395,2403	22 µF 10 V	5322 124 21303
		
1302	Potm. volume	4822 105 10856
1306,1307	potm.treb/bass	4822 105 10857



27 012C2

Chips 50 V NP0 S1206

1 pF	5%	4822 122 32479
1,5 pF	5%	4822 122 31792
1,8 pF	5%	4822 122 32087
2,2 pF	5%	4822 122 32425
3,3 pF	5%	4822 122 32079
3,9 pF	5%	4822 122 32081
4,7 pF	5%	4822 122 32082
5,6 pF	5%	4822 122 32506
6,8 pF	5%	4822 122 32507
8,2 pF	5%	4822 122 32083
10 pF	5%	4822 122 31971
12 pF	5%	4822 122 32139
15 pF	5%	4822 122 32504
18 pF	5%	4822 122 31769
22 pF	10%	4822 122 31837
27 pF	5%	4822 122 31966
33 pF	5%	4822 122 31756
39 pF	5%	4822 122 31972
47 pF	5%	4822 122 31772
56 pF	5%	4822 122 31774
68 pF	5%	4822 122 31961
82 pF	10%	4822 122 31839
100 pF	5%	4822 122 31765
120 pF	5%	4822 122 31766
150 pF	5%	4822 122 31767
180 pF	2%	4822 122 31794
220 pF	5%	4822 122 31965
270 pF	5%	4822 122 32142
330 pF	10%	4822 122 31642
390 pF	5%	4822 122 31771
470 pF	5%	4822 122 31727
560 pF	5%	4822 122 31773
680 pF	5%	4822 122 31775
820 pF	5%	4822 122 31974
1 nF	10%	5322 122 31647
1,2 nF	5%	4822 122 31807
1,5 nF	10%	4822 122 31781
1,8 nF	10%	4822 122 32153
2,2 nF	10%	4822 122 31644
2,7 nF	10%	4822 122 31783
3,3 nF	10%	4822 122 31969
3,9 nF	10%	4822 122 32566
4,7 nF	10%	4822 122 31784
5,6 nF	10%	4822 122 31916
6,8 nF	10%	4822 122 31976
10 nF	10%	4822 122 31728
12 nF	10%	5322 122 31648
15 nF	10%	4822 122 31782
18 nF	10%	4822 122 31759
22 nF	10%	4822 122 31797
27 nF	10%	4822 122 32541
33 nF	10%	4822 122 31981
47 nF	10%	4822 122 32542
56 nF	10%	4822 122 32183
100 nF	10%	4822 122 31947
180 nF	10%	4822 122 32915
220 nF	20%	4822 122 32715

Chips 0,125 W S1206 NP0

0 E	jumper	4822 111 90163
1 E	5%	4822 111 90184
1,1 E	5%	4822 111 90377
1,2 E	5%	4822 111 90378
1,3 E	5%	4822 111 90379
1,5 E	5%	4822 111 90381
1,6 E	5%	4822 111 90382
1,8 E	5%	4822 111 90383
2 E	5%	4822 111 90384
2,2 E	5%	5322 111 90104
2,4 E	5%	4822 111 90385
2,7 E	5%	4822 111 90386
3 E	5%	4822 111 90387
3,3 E	5%	4822 111 90388
3,6 E	5%	4822 111 90389
3,9 E	5%	4822 111 90391
4,3 E	5%	4822 111 90392

Chips 0,125 W S1206

4,7 E	5%	5322 111 90376
5,1 E	5%	4822 111 90393
5,6 E	5%	4822 111 90394
6,2 E	5%	4822 111 90395
6,8 E	5%	4822 111 90254
7,5 E	5%	4822 111 90396
8,2 E	5%	4822 111 90397
9,1 E	5%	4822 111 90398
10 E	2%	5322 111 90095
11 E	2%	4822 111 90338
12 E	2%	4822 111 90341
13 E	2%	4822 111 90343
15 E	2%	4822 111 90344
16 E	2%	4822 111 90347
18 E	2%	5322 111 90139
20 E	2%	4822 111 90352
22 E	2%	4822 111 90186
24 E	2%	4822 111 90355
27 E	2%	5322 111 90105
30 E	2%	4822 111 90356
33 E	2%	4822 111 90357
36 E	2%	4822 111 90359
39 E	2%	4822 111 90361
43 E	2%	5322 116 90125
47 E	2%	4822 111 90217
51 E	2%	4822 111 90365
56 E	2%	4822 111 90239
62 E	2%	4822 111 90367
68 E	2%	4822 111 90203
75 E	2%	4822 111 90371
82 E	2%	4822 111 90124
91 E	2%	4822 111 90375
100 E	2%	5322 111 90091
110 E	2%	4822 111 90335
120 E	2%	4822 111 90339
130 E	2%	4822 111 90164
150 E	2%	5322 111 90098
160 E	2%	4822 111 90345
180 E	2%	5322 111 90242
200 E	2%	4822 111 90348
220 E	2%	4822 111 90178
240 E	2%	4822 111 90353
270 E	2%	4822 111 90154
300 E	2%	4822 111 90156
330 E	2%	5322 111 90106
360 E	1%	4822 111 90288
360 E	2%	4822 111 90358
390 E	2%	5322 111 90138
430 E	2%	4822 111 90362
470 E	2%	5322 111 90109
510 E	2%	4822 111 90245
560 E	2%	5322 111 90113
620 E	2%	4822 111 90366
680 E	2%	4822 111 90162
750 E	2%	5322 111 90306
820 E	2%	4822 111 90171
910 E	2%	4822 111 90372
1 k	2%	5322 111 90092
1,1 k	2%	4822 111 90336
1,2 k	2%	5322 111 90096
1,3 k	2%	4822 111 90244
1,5 k	2%	4822 111 90151
1,6 k	2%	5322 111 90265
1,8 k	2%	5322 111 90101
2 k	2%	4822 111 90165
2,2 k	2%	4822 111 90248
2,4 k	2%	4822 111 90289
2,7 k	2%	4822 111 90569
3 k	2%	4822 111 90198
3,3 k	2%	4822 111 90157
3,6 k	2%	5322 111 90107
3,9 k	2%	4822 111 90571
4,3 k	2%	4822 111 90167
4,7 k	2%	5322 111 90111
5,1 k	2%	5322 111 90268
5,6 k	2%	4822 111 90572
6,2 k	2%	4822 111 90545

Chips 0,125 W S1206

6,8 k	2%	4822 111 90544
7,5 k	2%	4822 111 90276
8,2 k	2%	5322 111 90118
9,1 k	2%	4822 111 90373
10 k	2%	4822 111 90249
11 k	2%	4822 111 90337
12 k	2%	4822 111 90253
13 k	2%	4822 111 90509
15 k	2%	4822 111 90196
16 k	2%	4822 111 90346
18 k	2%	4822 111 90238
20 k	2%	4822 111 90349
22 k	2%	4822 111 90251
24 k	2%	4822 111 90512
27 k	2%	4822 111 90542
30 k	2%	4822 111 90216
33 k	2%	5322 111 90267
36 k	2%	4822 111 90514
39 k	2%	5322 111 90108
43 k	2%	4822 111 90363
47 k	2%	4822 111 90543
51 k	2%	5322 111 90274
56 k	2%	4822 111 90573
62 k	2%	5322 111 90275
68 k	2%	4822 111 90202
75 k	2%	4822 111 90574
82 k	2%	4822 111 90575
91 k	2%	5322 111 90277
100 k	2%	4822 111 90214
110 k	2%	5322 111 90269
120 k	2%	4822 111 90568
130 k	2%	4822 111 90511
150 k	2%	5322 111 90099
160 k	2%	5322 111 90264
180 k	2%	4822 111 90565
200 k	2%	4822 111 90351
220 k	2%	4822 111 90197
240 k	2%	4822 111 90215
270 k	2%	4822 111 90302
300 k	2%	5322 111 90266
330 k	2%	4822 111 90513
360 k	2%	4822 111 90515
390 k	2%	4822 111 90182
430 k	2%	4822 111 90168
470 k	2%	4822 111 90161
510 k	2%	4822 111 90364
560 k	2%	4822 111 90169
620 k	2%	4822 111 90213
680 k	2%	4822 111 90368
750 k	2%	4822 111 90369
820 k	2%	4822 111 90205
910 k	2%	4822 111 90374
1 M	2%	4822 111 90252
1,1 M	5%	4822 111 90408
1,2 M	5%	4822 111 90409
1,3 M	5%	4822 111 90411
1,5 M	5%	4822 111 90412
1,6 M	5%	4822 111 90413
1,8 M	5%	4822 111 90414
2 M	5%	4822 111 90415
2,2 M	5%	4822 111 90185
2,4 M	5%	4822 111 90416
2,7 M	5%	4822 111 90417
3 M	5%	4822 111 90418
3,3 M	5%	4822 111 90191
3,6 M	5%	4822 111 90419
3,9 M	5%	4822 111 90421
4,3 M	5%	4822 111 90422
4,7 M	5%	4822 111 90423
5,1 M	5%	4822 111 90424
5,6 M	5%	4822 111 90425
6,2 M	5%	4822 111 90426
6,8 M	5%	4822 111 90235
7,5 M	5%	4822 111 90427
8,2 M	5%	4822 111 90237
9,1 M	5%	4822 111 90428
10M	5%	5322 111 91141

SERVICE TEST PROGRAMME

If there is something wrong in the focus circuit or in the laser circuit, the discs will be ejected immediately after loading it. It is not possible to carry out measurements. By closing the SERVICE BRIDGE this eject will be prevented. As a consequence the disc remains on the turntable and the radial circuit and the turntable motor will function normally.

CHECKING THE LASER AND THE FOCUS UNIT

- Short-circuit the SERVICE BRIDGE
- Insert the glass disc 4822 395 90204
- The turntable motor starts turning

- The RAFOC arm moves
- The laser will burn again and again for a short moment. By connecting measuring point 21 (Si) with ground, the laser will burn continuously.
- The focus unit will move at the moment the laser is burning. This can be checked by keeping the arm still.
- Press the STOP button.
- Wait until the disc stands still. This will take more time than for a normal disc owing to the mass of the glass disc.
- Press the EJECT button.

Quick fault tracing

If the set is in the Service position, some measurement can be carried out to come to a quick fault tracing. A detailed measuring method has been printed in this manual.

SERVICE POSITION 1

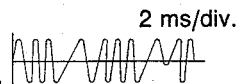
Photo-diode signal processor IC 6055

Laser on: LO (pin 17; test point 9) = "high"

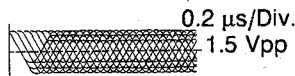
Focus start on:

FE (pin 5; test point 26)

FElag (pin 6; test point 27) = "high"



HF out (pin 27; test point 17)



HFD (pin 19; test point 23)



TL (pin 18; test point 16)



Adjust 3227 for 50 KΩ (focus motor)

Radial error processor IC 6057

Vdc radial motor A071-A072 = 2 V

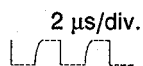
DAC (pin 10; test point 38) = 4.2 V

REdig (pin 3; test point 37)

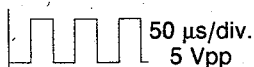


Decoder-A IC 6051

MC (to be measured on collector of 6069)



SWAB/SSM (pin 33; test point 78)



Xin (pin 19; test point 69) = 11.2896 MHz ± 0.1%

Turntable motor

V(out) connectorpoint A073 = ± 4V (arm at inner track). Upon moving the arm, a higher voltage.

Display

All segments of the display light up.

SERVICE POSITION 2

Radial error processor IC 6057

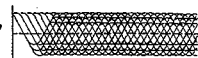
Radial in tracking

RE (pin 7; test point 39) pulses when moving the arm by hand

RElag (pin 8; test point 41) pulses when moving the arm by hand

Check whether PLL is in "lock" position:

Oscilloscope: input A = HF signal (IC 6055, pin 27; test point 17)
input B = CEFM (IC 6051, pin 27; test point 68)
trigger on B

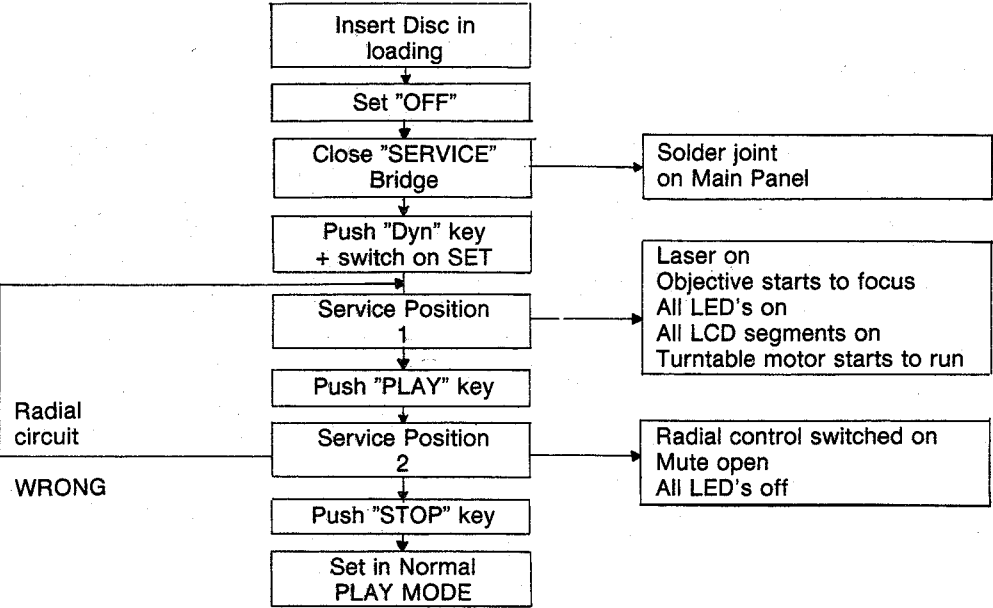
A = stable "eye pattern" 

B = 

PLAY POSITION

Adjust 3110 for 0.5 V on pin 5 of IC 6057 (radial error processor) in relation to Vref.

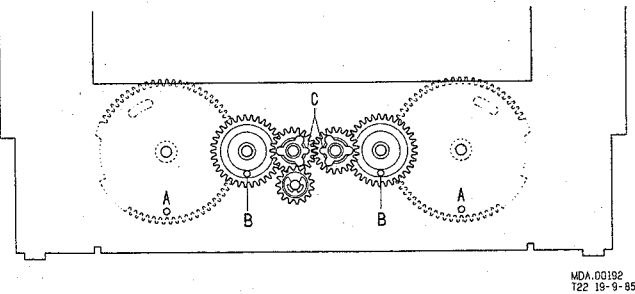
Service Test Program



Adjusting the toothed wheels of the loading mechanism

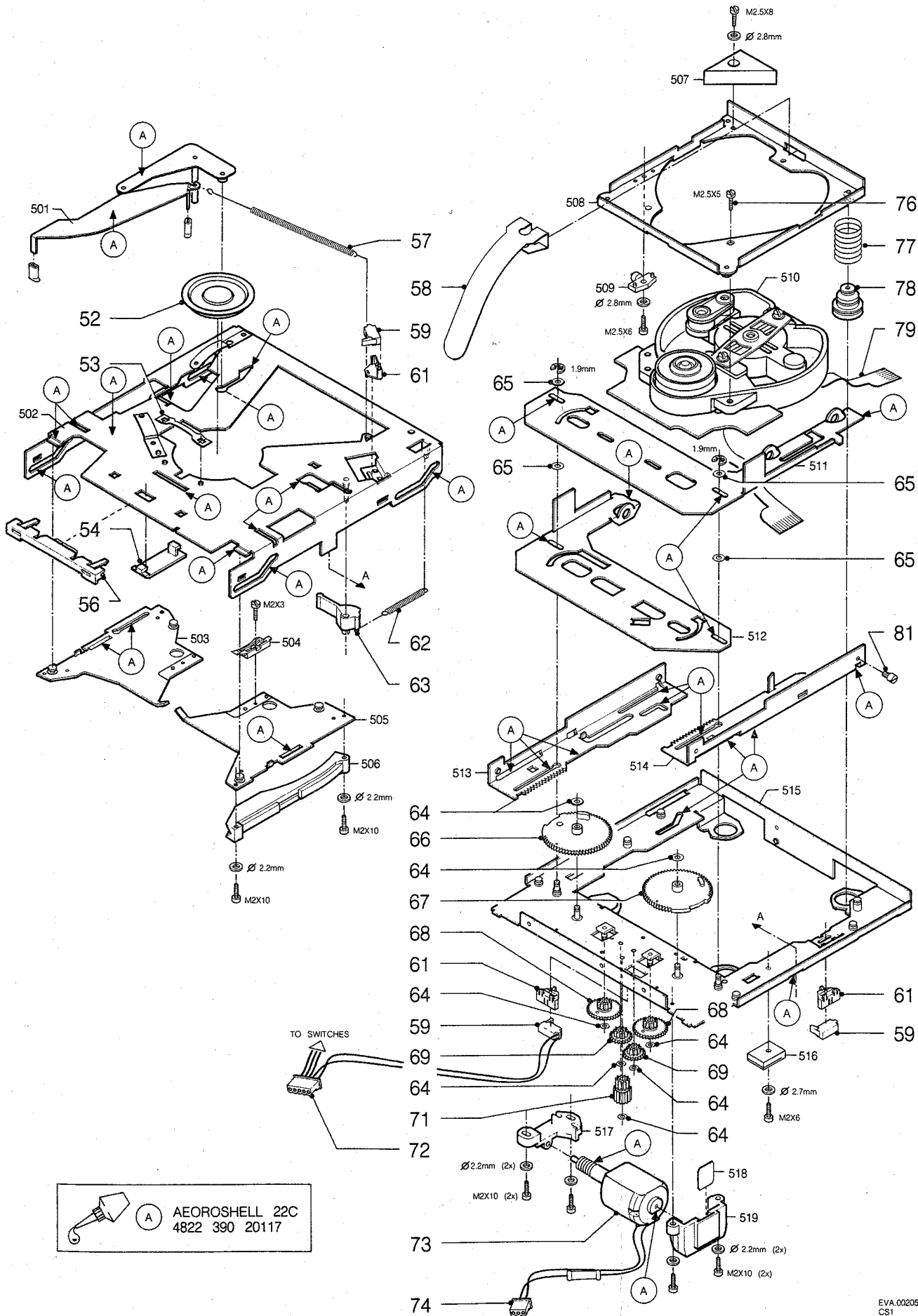
The left-hand and right-hand rack must move exactly synchronously, because otherwise the mechanism may get jammed. As there are some double toothed wheels with a different number of teeth being in a certain position, these toothed wheels have to be placed in the correct position.

- Place the hole of the big toothed wheel opposite to the hole in the chassis plate and put a paper clip through them.
- The same action with the two middle-most toothed wheels, holes B.
- Direct the small toothed wheels with the recess C to each other.
- Mount the clamping rings.



MDA 00192
T22 19-9-95

52	4822 466 81737
53	4822 492 63405
54	4822 466 91708
56	4822 462 40994
57	4822 492 32623
58	4822 492 63406
59	4822 277 10749
61	4822 256 91006
62	4822 492 32622
63	4822 402 50232
64	4822 532 51743
65	4822 532 10215
66	4822 528 70486
67	4822 528 70487
68	4822 522 32129
69	4822 522 32131
71	4822 522 32132
72	4822 320 50074
73	4822 361 20697
74	4822 320 50075
76	4822 502 11715
77	4822 492 51892
78	4822 529 10192
79	4822 466 91706
81	4822 502 12558
M2x6	4822 502 10679
M2x10	4822 502 12555
M2, 5x5	4822 502 11715
M2, 5x6	4822 502 10813



EVA.00205
CS1
647 T22

DETAILED MEASURING METHOD FOR THE DECODER CIRCUIT AND SERVO-CIRCUIT

HINTS

Test discs

It is important to treat the test discs with great care. The disorders on the discs (black spots, fingerprints, etc.) are exclusive and unambiguously positioned. Damage may cause additional drop-outs etc. rendering the intentional errors no longer exclusive. In that case it will no longer be possible to check e.g. the good working of the track detectors.

Measurements on op-amps

In the electronic circuits op-amps have been used frequently. Some of the applications are amplifiers, filters, inverters and buffers.

In those cases where in one way or the other feedback has been applied the voltage difference at the differential inputs converges to zero. This applies to both DC and AC signals. The cause can be traced to the properties of an ideal op-amp ($Z_i = \infty$, $G = \infty$, $Z_o = 0$). If one input of an op-amp is directly connected to ground it will be virtually impossible to measure at the inverting and the non-inverting inputs. In such cases only the output signal will be measurable.

That is why in most cases the AC voltage at the inputs will not be given. The DC voltages at the inputs are equal.

Stimulation with "0" and "1"

During troubleshooting sometimes certain points should be connected to ground or supply voltage. As a result certain circuits can be brought in a desired state thus shortening the diagnosis time. In a number of cases the related points are outputs of op-amps. These outputs are short-circuit-resistant, i.e. they can be brought to "0" or ground without problems.

The output of an op-amp, however, should never be connected directly to the power supply voltage.

Measurements on microprocessors

Inputs and outputs of microprocessors should **never** be connected directly to the power supply voltage. The inputs and outputs should only be brought to "0" or ground if this is stated explicitly.

Measurements with an oscilloscope

During measurements with an oscilloscope it is recommended to measure with a 1:10 test probe, since a 1:10 probe has a considerably smaller input capacitance than a 1:1 probe.

Selection of ground potential

It is very important to select a ground point that is as close as possible to the test point.

Conditions for injection

- Injection of levels or signals from an external source should **never** take place if the related circuit has no supply voltage.
- The injected levels or signals should **never** be greater than the supply voltage of the related circuit.

Indication of test points

In the drawings of the diagrams and the panels the test points have been indicated by a number (e.g. 42) to which the measuring method refers. In the measuring method below, the symbol (◇) has been omitted for the test points indicated.

GENERAL CHECKPOINTS

In the detailed measuring method below a number of general conditions, required for a properly functioning set, will not be mentioned. Before the detailed measuring method is started, these general points should first be checked.

- Ensure that disc and objective are clean (remove dust, fingerprints, etc.) and work with undamaged discs.
- Check if all supply voltages are present and if they have the correct values.

PHOTODIODE SIGNAL PROCESSOR IC 6055

• **Si** (pin 20; test point 21)
• **LO** (pin 17; test point 9)
• **LM** (pin 16; test point 11)

- With the Si signal (=Start Initialization) the laser supply, among other things, is switched on. When the Si signal is "low", the LO signal (=Laser Out) should be "high".
- Via the LM signal (=Laser Monitor) the power supply for the laser diode is controlled.

Position of player	Servicing pos. 1	PLAY
Si signal	"low"	"low"
LO signal	"high"	"high"
LM signal	0,2V ± 0,05V	0,2V ± 0,05V

To check the laser supply, see "CHECK OF THE LASER SUPPLY".

• **FE** (pin 5; test point 26)

- The FE signal (=Focus Error) is used to drive the focusing unit. When the Si signal goes "low", the focal point will be searched for.
- The FE signal ensures that the spot stays in focus. When an error signal is detected, the FE signal will correct. Bring the player in servicing position 1. When the arm is moved by hand, pulses should be present at test point 26.

• **RD** signal (pin 21; test point 24)

The RD signal (=Ready) goes "high" when the starting cycle has been ended, within 9 sec. after Si = low.

Position of player	STOP	Servicing pos. 1	PLAY
RD signal	"low"	"high"	"high"

• **D1** (pin 9; test point 4)
• **D2** (pin 10; test point 6)
• **D3** (pin 8; test point 7)
• **D4** (pin 7; test point 8)

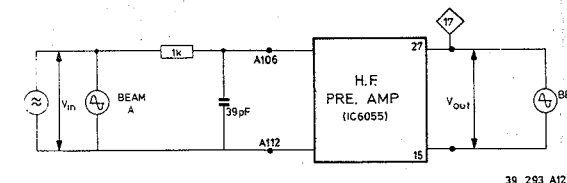
- The signals D1+D4 are the error signals from the photodetector circuits.
- When in servicing position 2 the arm is moved, the focusing unit should keep in track. When the arm is moving, there should be a changing signal on test points 4, 6, 7 and 8.

• **HF-in** (pin 3, test point 3)

- The HF-in signal (= High Frequency in) is the information signal from the 4 photodiodes. Position of the oscilloscope: 1 µs/div. Amplitude 10mVpp

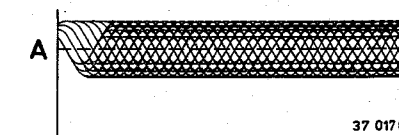
Check of the HF amplifier in IC6055

- Take the flexible PCB out of connector A1.
- Close service bridge
- Switch on the set + push COMP switch (service pos. 1).
- Inject a signal V-in of about 40 mVpp, 50 kHz, via the RC network, between connector pin A106 and connector pin A112 according to the diagram below.
- The output voltage on test point 17 should be about 1.5 Vpp.
- Switch off the set.
- Replace flexible PCB in connector A1.
- Switch on the set.
- Push the play switch (Service pos. 2).
- Push the stop switch.



• **HF-out** (pin 27; test point 17)

- The HF-out signal (=High-Frequency) is the amplified information signal for the decoder circuit. During playback of test disc no. 5 (4822 897 30096), a so-called "eye pattern" should be present on test point 17 (see figure below).
- The HF signal should be present and stable in: the PLAY mode and in servicing position 2 after the lead-in track has been read. In servicing position 1 and during the reading of the lead-in track, the HF signal is present, but is not stable.



Position of the oscilloscope: 0,2 µs/div.
Amplitude about 1,5 Vpp.

• **DET** (pin 26)
• **HFD** (pin 19; test point 23)
• **TL** (pin 18; test point 16)

- The DET signal (=Detector) gives information on the level of the HF signal to the high-frequency Level/Drop-out detector of IC6055.
- When the level of the HF signal is too low, the HFD signal (=High-Frequency Detector) will go "low".
- The TL signal (=Track Lost) will then go "low" in order to tell the servo µC that the tracking signals are unreliable.

Method:

(Can only be used in a playing set).

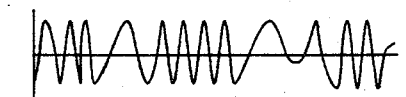
- Insert test disc 5A (4822 397 30096).
- Play track number 15 and check the HFD signal at test point 23. When drop-out pulses are present on the DET signal (pin 26), the HFD pulses should also be present at test point 23. (Position of oscilloscope: 2 ms/div).

When the arm is moved by hand or pushing NEXT or PREV., TL pulses will be visible at test point 16.

• **RE 1** (pin 11; test point 18)
• **RE 2** (pin 12; test point 22)

- Signals RE1 and RE2 (Radial Error) are the control signals for the arm during tracking.

- In servicing position 1, the following signals should be visible at test point 18 and 22:



Position of the oscilloscope: 2ms/Div.
The frequency strongly depends on the eccentricity of the disc.

• **SC** (pin 25)

SC (=Start Capacitor)
Zi multimeter > 80 MΩ.

Position of player	SC (pin 25)
STOP	0 V
PLAY	+5 V
Servicing pos. 1	+5 V

RADIAL ERROR PROCESSOR IC6057

Check the signals coming from servo µC6060 and from photodiode signal processor IC6055.

• **RE-dig** (pin 3; test point 37)

- With the RE dig signal (=Radial Error digital=Radial Polarity), the movement of the arm is controlled/corrected in case of track jumping and bumping against the player).

- In servicing position 1 and 2 or in the PLAY mode a square wave should be present at test point 37. Because of frequency variations this square wave is hard to trigger.

• **DAC** (pin 10; test point 38).

With the DAC signal (=Digital to Analogue Converter) the track jumping speed is controlled. This signal is derived from the signals B0 + B3 coming from the servo µC.

• **RE** (pin 7; test point 39)

- With the RE signal (=Radial Error) the light spot is kept on the track. When an error signal is detected, the RE signal will correct.
- Bring the player in servicing position 2.
- When the arm is moved by hand, pulses should be present at test point 39.

RE lag (pin 8; test point 41)

Capacitor 2133 in the RE-lag circuit has a memory function. It memorizes the degree of inclination of the disc. When a jump is made to a certain track on the disc, the memory should be cleared. This is done by the servo μ C (pin 43; test point 43) via transistor 6084.

During track jumping (moving the arm in service pos. 2), slow pulses should be visible at test point 43 (position of the oscilloscope 0,1 ms/Div). In that case pulses should also be visible on the collector of transistor 6084.

SERVO μ C IC6060

Reset (pin 29)

When the set is switched on, a positive pulse should be present.

X-TAL out (pin 28)

The frequency of this signal should be 4 MHz.

Si (pin 7; test point 21)

When the Si signal (= Start Initialization) is "low", the laser supply and the focusing control are switched on.

Position of player	Servicing pos. 1	PLAY
Si signal	"low"	"low"

RD (pin 11; test point 24)

The RD signal (= Ready) goes "high" when the start procedure is finished.

Position of player	Servicing pos. 1	Servicing pos. 2	PLAY
RD-signal	"low"	"high"	"low"

SSM (pin 8; test point 78)

When, after RD "high", the SSM is "high" for a short moment (> 0.2 sec), the turntable motor control will be switched on. The turntable motor is controlled by the MC-signal (test point 81). To check MC, see: "Decoder A IC". To check the turntable motor control, see: "Checking of the motor control CDM-3 Service Manual."

B0 (pin 44; test point 36)

B1 (pin 1; test point 34)

B2 (pin 2; test point 33)

B3 (pin 3; test point 32)

With the B0 + B3 signals

- The radial control is switched on.
- The level on the DAC output is controlled.
- In the "NEXT" and "PREV." mode, there should be activity on all 4 test points.
- In the following positions the signals B0 + B3 are stable:

signal	STOP	PLAY	Service pos. 1	Service pos. 2
B0	"low"	"high"	"low"	"high"
B1	"low"	"high"	"high"	"high"
B2	"low"	"high"	"low"	"high"
B3	"low"	"low"	"low"	"low"

TL (pin 31; test point 16)

- The TL signal (Track Loss) is used to tell the μ C that track loss threatens. The μ C then can give correction signals with B0 + B3.
- In the "NEXT" and "PREV." mode, or when the player is bumped against, there are pulses on test point 16.

REdig (pin 32; test point 37)

The REdig signal (= Radial Error Digital = radial deviation) is used to determine the place of the arm relative to the track and to check/correct in case of track jumping or bumping against the player.

In servicing position 1 and 2 or in the PLAY mode, a square wave should be present on test point 37. Because of frequency variations, this square wave is hard to trigger.

DODS (pin 9; test point 19)

The DODS signal (= Drop Out Detector Suppression) avoids that Drop-Out signals influence the arm control during track jumping.

Position of player	Servicing pos. 1	Servicing pos. 2	PLAY	STOP
DODS signal	"low"	"high"	"high"	"low"

CONTROL μ C IC 6064

Hold (pin 30)

When the set is switched on, a positive pulse should be present.

X-tal out (pin 28)

The frequency of this signal should be 4 MHz.

Mute (pin 12)

Position of the player	STOP	PLAY	Next/prev.
Mute	"low"	"high"	"low"

1/2 Mute (pin 13)

Position of the player	STOP	PLAY	Next/prev.
1/2 Mute	"low"	"high"	"high"

K00 (pin 22)

During pushing the keys: Prev, Scan and Next, pin 22 is "low".

K01 (pin 23)

During pushing the keys: Stop, Play and Eject, pin 23 is "low".

DECODER-A IC 6051

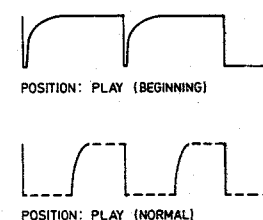
Check the MC signal (pin 17; test point 81)

- In position PLAY or SERVICE POSITION 1 and 2, the MC signal corresponds to the figure below.

0,5 μ s/div
Ampl. ≈ 1 Vpp

Note:

During start-up the duty cycle is 98%, then the duty cycle of the signal becomes about 50%.



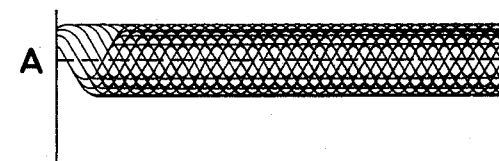
38 849 A12

Check the HF signal on pin 25 (eye pattern)

- Insert a disc.
- The HF signal should be present and be stable in the PLAY mode and in: SERVICING POSITION 2 after the run-in track has been read (move the arm by hand).
- In SERVICING POSITION 1 and during reading of the lead-in track the HF signal is not stable.

Position of oscilloscope 0.5 μ s/DIV.

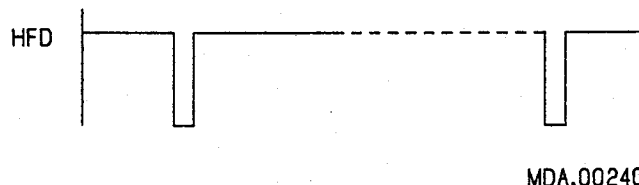
Amplitude ≈ 1.5 V_{pp}



Check the HFD signal (pin 26; test point 23)

- Insert a disc.
- In the PLAY mode and in SERVICING POSITION 2 the HFD signal is "high"; however, minor pulses may be present and in cause of disorders on the disc.
- During playback of track no. 15 of test disc 5A HFD pulses are visible.

Position of the oscilloscope 5 ms/DIV



Check the CEFM signal (pin 27; test point 68)

- Insert a disc
- In the position PLAY and SERVICE POSITION 1 and 2, the frequency is 4.32 MHz.

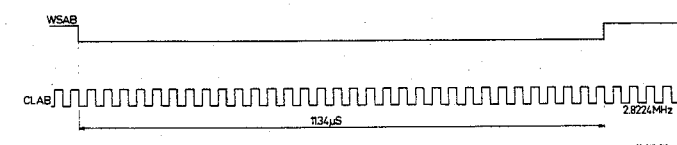
Check the Xin signal (pin 19; test point 69)

- The Xin frequency is 11.2896 MHz $\pm 0.1\%$.
- If this frequency deviates, check Xout signal, on Filter-B IC (pin 10). This frequency should also be 11.2896 MHz $\pm 0.1\%$.

Check the timing signals meant for Filter-B IC

- Insert a disc.
- Trigger the oscilloscope on the WSAB signal (test point 71; pin 39).
- Check signals: WSAB at test point 71 (pin 39) (Word Select from Decoder-A to Filter-B)

- CLAB at test point 72 (pin 38) (Clock from Decoder-A to Filter-B) and their interrelation.
- There must be activity at test point 73 (pin 37), DAAB signal (DATA from Decoder-A to Filter-B).

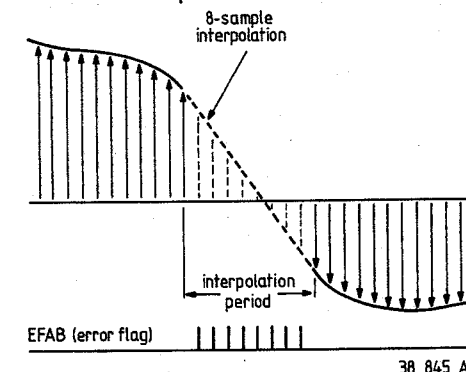


Check the EFAB signal (Error Flag from Decoder-A to Filter-B) at test point 74 (pin 36)

- Insert a disc
- The EFAB pulses appear when the disc is gently slowed down and during "NEXT" and "PREV."

Note:

Filter-B IC is capable of interpolating linearly 8 successive EFAB pulses.

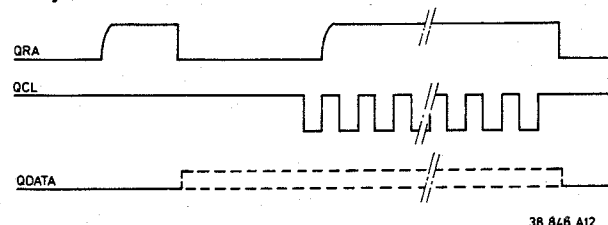


Check the Q-channel signals

- Insert a disc
- Trigger on the QRA signal (Q-channel Request Acknowledge) test point 75; pin 30.
- Check signals QRA at test point 75 (pin 30) QCL at test point 76 (pin 31). (Q-channel-clock) and their interrelation.
- There should then be activity at test point 77 (pin 29) QDA (Q-channel Data).

Note:

The QRA request is initiated by the servo μ C (QRA "high"). Then Decoder-A answers this request (QRA goes "low"). With the next leading clock pulse (QCL) the QRA signal is rendered "high" again by the μ C. As soon as the μ C has taken in enough information via QDA, QRA will go low again. That is why the QRA times vary each time.



Check whether PLL is in "lock" position:

Oscilloscope: input A = HF signal (IC6055, pin 27; test point 17) input B = CEFM (IC6051, pin 27; test point 68) trigger on B

A = stable "eye pattern"

B = 0.2 μ s/div. 4 Vpp



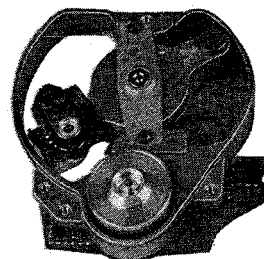
V13972

C.D.M.-3

Service
Service
Service

Compact disc player

MECHANISM



40 013 A12

Service Manual

COMPACT
disc
DIGITAL AUDIO

**CLASS 1
LASER PRODUCT**

3122 110 03420

Veiligheidsbepalingen vereisen, dat het apparaat in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde worden toegepast.

Documentation Technique Service Dokumentation Documentazione di Servizio Huolto-Ohje Manual de Servicio Manual de Servicio

Subject to modification
NL 4822 725 21062

Printed in The Netherlands
© Copyright reserved

Published by
Consumer Electronics

CS 4 372

INHOUD

- 1 Inhoudsopgave en toelichting indeling
- 2 Reparatiewenken
- 3 Metingen en instellingen
- 4 Exploded view C.D. mechanisme en stuklijst van de onderdelen
Principeschema's, printplaatgegevens en stuklijsten van elektrische onderdelen
Service hulpmiddelen

1. TOELICHTING OP DE INDELING VAN DE DOKUMENTATIE

De dokumentatie bestaat uit hoofdstukken.
Het nummer van het hoofdstuk wordt aangegeven door het eerste cijfer van het paginanummer.
Het tweede cijfer van het paginanummer is de volgordenummering.

Indien wijzigingen of aanvullingen nieuwe toevoegings- of vervangingsbladen noodzakelijk maken wordt het paginanummer uitgebreid met een derde deel:
Een cijfer achter het paginanummer geeft aan dat het een toevoegingsblad is.
Een vervangingsblad wordt aangegeven door een letter achter het paginanummer.

Voorbeeld:

3-6	is pagina 6 van hoofdstuk 3
3-6-1	is een toevoegingsblad achter pagina 3-6
3-6-a	is het vervangingsblad van pagina 3-6 (pagina 3-6 kan dus uit de dokumentatie worden verwijderd).

REPARATIEWENKEN

Om te voorkomen dat losse metalen voorwerpen in het CD mechanisme terecht komen moet ervoor gezorgd worden dat de plaats waarop gerepareerd wordt schoon is.

Het objectief kan met een blaaskwastje worden schoongemaakt.

Zorg ervoor dat bij reparatie en metingen aan het CD mechanisme de bladveren van de focusunit niet beschadigd worden.

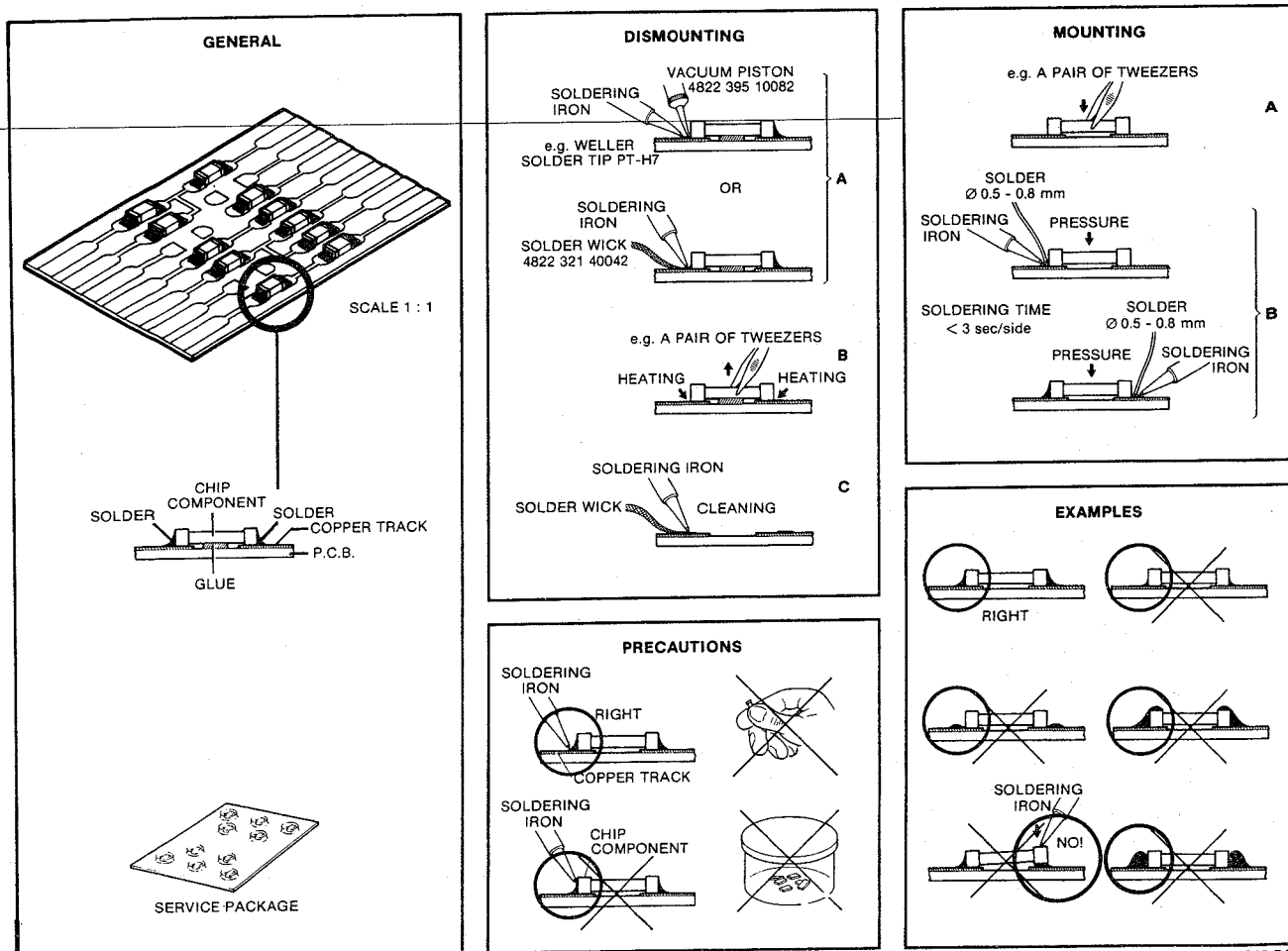
DE FOTODIODES EN DE LASER ZIJN VOOR ELEKTROSTATISCHE ONTLADINGEN GEVOELIGER DAN EEN MOS IC.

ONZORGVULDIG BEHANDELEN TIJDENS HET SERVICEN KAN DE LEVENSDUUR DRASTISCH VERMINDEREN. ZORG ER DAAROM VOOR DAT TIJDENS HET SERVICEN DE HULPMIDDELEN EN UZELF HETZELFDE POTENTIAAL HEBBEN ALS DE AFSCHERMING VAN HET APPARAAT.

In het apparaat zijn chip componenten toegepast. Voor het demonteren en monteren van chip componenten zie onderstaande figuur.

De plaat moet altijd goed aanliggen op de draaitafel. Wanneer voor reparatie het lademechanisme moet worden uitgebouwd, gebruik dan een of meerdere losse aandrukkers. Het CD mechanisme kan dan normaal als in het apparaat functioneren.

In het apparaat zijn chip componenten toegepast voor het demonteren en monteren van chip componenten, zie onderstaande Fig.



- ESD



Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD). Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen. Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat. Houd componenten en hulpmiddelen ook op hetzelfde potentiaal.

Servicen van de RAFOC unit

De RAFOC-unit bestaat uit de posities 51, 53, 56 en 59.

- Maak de folieprint los door de klem pos. 52 uit het motorchassis te trekken.
- Draai de twee bouten M2,5X6 los en verwijder de lagerplaat pos. 54. Pos. 57 en pos. 58 zit in de plaat geklemd.
- Verwijder nu de defecte RAFOC-unit.
- Monteer nu in omgekeerde volgorde de nieuwe RAFOC-unit.
- Controleer of de arm vrijloopt en ook de hoekinstelling. Zie voor de hoekinstelling het volgende hoofdstuk.

Testplaten

Het is belangrijk dat de testplaten met grote zorg worden behandeld. De verstoringen op de platen (zwarte spots, vingerafdrukken enz.) zijn exclusief en zijn eenduidig gepositioneerd.

Beschadigingen kunnen extra drop-outs e.d. veroorzaken waardoor de gewilde fout op de plaat niet meer exclusief is. Het testen van b.v. de goede werking van de trackdetector is dan niet meer mogelijk.

Metingen aan op-amps

In de servoschakelingen is veelvuldig gebruik gemaakt van op-amps. Die kunnen o.a. toegepast zijn als versterkers, filters, invertors en buffers.

In die gevallen, waarbij op een of andere manier terugkoppeling is toegepast, convergeert het spanningsverschil aan de differentiële ingangen naar nul. Dit geldt zowel voor DC als AC signalen.

De oorzaak hiervan is terug te voeren tot de eigenschappen van een ideale op-amp ($Z_i = \infty$, $G = \infty$, $Z_o = 0$).

Wanneer één ingang van een op-amp, rechtstreeks doorverbonden is met massa is het nagenoeg onmogelijk aan de inverterende en de niet-inverterende ingangen te meten.

In zo'n geval is alleen het uitgangssignaal meetbaar.

Daarom zal in de meeste gevallen de AC-spanning aan de ingangen niet gegeven worden. De DC-spanningen aan de ingangen zijn gelijk aan elkaar.

Stimuleren met "0" en "1"

Tijdens het foutzoeken moeten soms bepaalde punten met aarde of met voedingsspanning worden verbonden. Hierdoor kunnen bepaalde schakelingen in een gewenste toestand worden gebracht, waardoor de diagnosetijd wordt verkort. In een aantal gevallen zijn de desbetreffende punten uitgangen van op-amps. Deze uitgangen zijn kortsluitvast, d.w.z. dat ze ongestraft op "0" of massa gebracht mogen worden.

De uitgang van een op-amp mag echter nooit rechtstreeks aan de voedingsspanning worden gelegd.

Metingen aan microprocessoren

In- en uitgangen van microprocessoren mogen **nooit** rechtstreeks aan de voedingsspanning worden gelegd. De in- en uitgangen mogen alleen op "0" of massa worden gebracht wanneer dit uitdrukkelijk vermeld staat.

Metingen met een oscilloscoop

Bij het meten met een oscilloscoop is het aan te bevelen met een 1:10 meetprobe te meten, daar een 1:10 probe een aanzienlijk kleinere ingangscapaciteit heeft dan een 1:1 probe.

Keuze van het aardpotentiala

Het is erg belangrijk een aardpunt te kiezen wat zo dicht mogelijk bij het testpunt ligt.

Voorwaarden voor injecteren

- Injecteren van niveau's of signalen uit een **externe** bron mag **nooit** gebeuren als de betreffende schakeling geen voedingsspanning heeft.
- De geïnjecteerde niveau's of signalen mogen **nooit** groter zijn dan de voedingsspanning van de betreffende schakeling.

ALGEMENE KONTROLEPUNTEN

- a. Zorg ervoor dat plaat en objectief schoon zijn (verwijder stof, vingerafdrukken e.d.) en werk met onbeschadigde platen.
- b. Controleer of alle voedingsspanningen aanwezig zijn en de goede waarde hebben.
- c. Controleer de goede werking van de microprocessor d.m.v. hun ingebouwde test-programma en serviceprogramma.

METINGEN EN INSTELLINGEN.

Hoogte instelling van de draaitafel

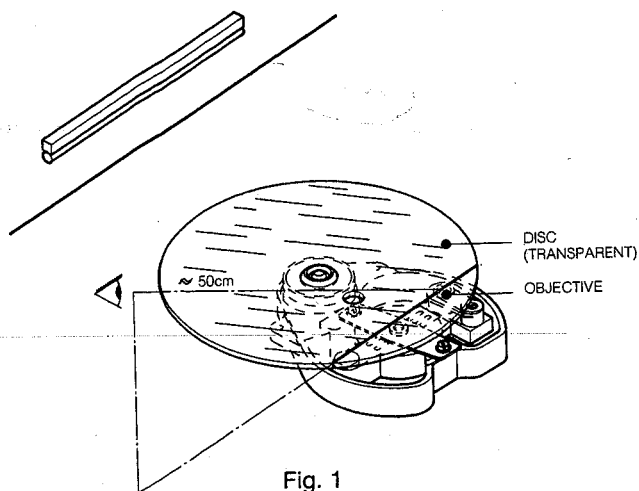
Voor deze instelling moet het apparaat in de normale gebruiksstand staan.

- Sluit een D.C.voltmeter aan tussen de FOCUS+ en de FOCUS- van de focusmotor (zie voor de connector aansluitingen de service manual van het apparaat waarin het CDM is ingebouwd).
- Speel van testplaat 5 (codenr. 4822 397 30096), plaat zonder defecten spoor 1 af.
- Regel met de lagerschroef pos. 66 de draaitafelhoogte zodanig, dat de spanning over de focusmotor 0V + - 100mV is.
- Borg de schroef met borglak.

Kontrole van de hoekinstelling

Gebruik voor deze instelling de glazen plaat codenr. 4822 395 90204 en de aandrukker 4822 404 20725.

- Leg de glazen plaat op de draaitafel met de aandrukker.
- Plaats het CDM onder een lichtbron, waaronder zich een rechte lijn bevindt (b.v. TL met rooster).
- Zet de arm in de middenstand. Draai het apparaat zo, dat de arm evenwijdig staat met de lijn onder de lichtbron (zie Fig. 1).



- Kijk in de richting en in het verlengde van de lijn naar de reflectie hiervan op de glasplaat en focuslens.
- De reflectie in het objectief moet binnen het oppervlak van de focuslens vallen. (De twee reflecties liggen dan < 4 mm uit elkaar).
- Draai het CDM 90 graden ten opzichte van de vorige stand (zie Fig. 2).
- Herhaal de meting.

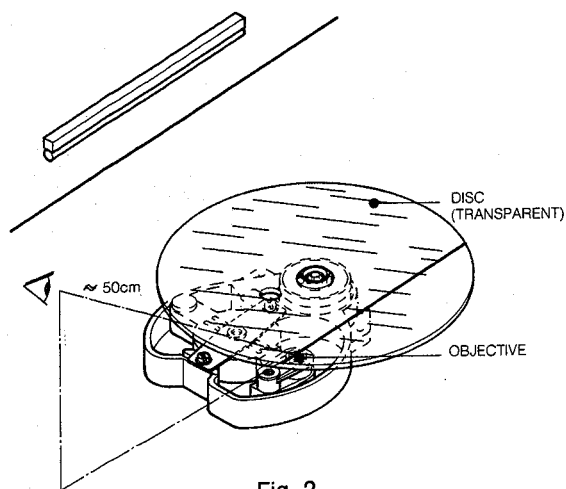


Fig. 2

Afregelen van de hoekinstelling

Bij het afregelen van de hoek plaatlichtweg in de fabriek is een compromis gezocht tussen een minimale hoekafwijking en minimale wrijving van de arm. Indien bij meting blijkt dat de hoek buiten de gegeven tolerantie valt moet de hoek NIET op minimale afwijking maar juist binnen de tolerantie worden afgeregeld. De nieuwe instelling moet liggen tussen de oude instelling en de optimale instelling.

Na de afregeling moet de wrijving van de arm worden gecontroleerd. Dit gebeurt met behulp van een veerdrukmeter welke wordt aangelegd bij het contragewicht. De wrijving van de arm mag gemeten over de hele uitslag niet groter zijn dan 30 mN. Wanneer de wrijving te hoog blijkt te zijn moet de instelling op de oude waarde worden teruggebracht. Of vervang de arm door een nieuwe en controleer opnieuw de hoek.

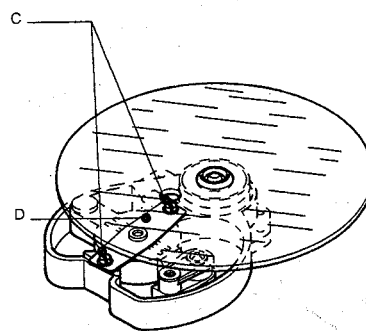
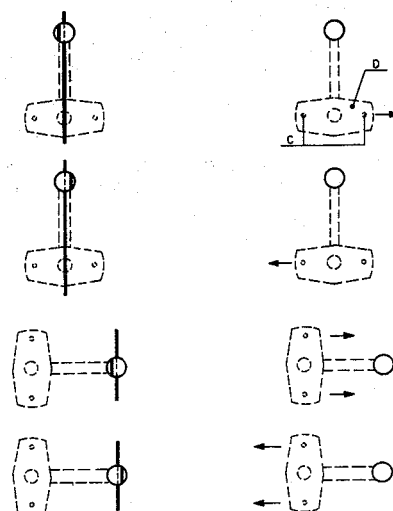


Fig. 3

- Draai de schroeven C (zie Fig. 3) zover los dat de lagerplaat D te verschuiven is. Voor de binnenste schroef is een gat in de glasplaat gemaakt.
- Corrigeer de hoekinstelling door de lagerplaat in de richting te verschuiven welke in fig. 4 wordt aangegeven.
- Draai de schroeven C vast en let hierbij op dat de instelling niet verloopt.
- Controleer hierna nogmaals de hoekinstelling in twee richtingen.
- Na de instelling van de hoek moet de hoogteinstelling van de draaitafel worden gecontroleerd.



30 710 A15

Fig. 4

Kontrole van de motorregeling (Hall-regeling)

- Onderbreek de V_c verbinding (zie voor de connector aansluiting de service manual van het apparaat waarin het CDM is ingebouwd).
- Sluit van een dubbelstraal oscilloscoop kanaal A aan op pin 3 van IC 6083(a) en kanaal B op pin 1 van IC 6083(b). Meten t.o.v. V_{b+2} .
Time base 10 ms/div.

- 1 Schakel de speler in.
- 2 Injecteer een spanning van $-0,9\text{ V t.o.v. } V_{b+2}$ (!) $\pm 0,1\text{ V}$ op punt 04 van de motorprint.
Het injecteren mag pas gebeuren nadat de schakeling op de de voedingsspanning is aangesloten.
- 3 Op de oscilloscoop moeten nu sinusvormige signalen zichtbaar zijn welke na ca. 2 sec. symmetrisch rond de 0-as liggen en 90 graden in fase t.o.v. elkaar verschoven zijn (zie Fig. 5).
De amplituden van deze signalen mogen maximaal een verhouding van 1:2 hebben.

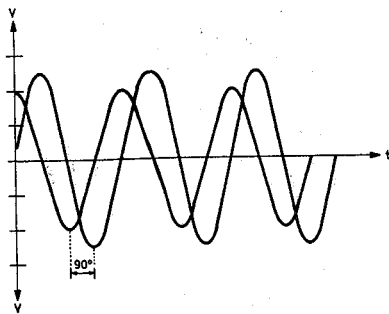
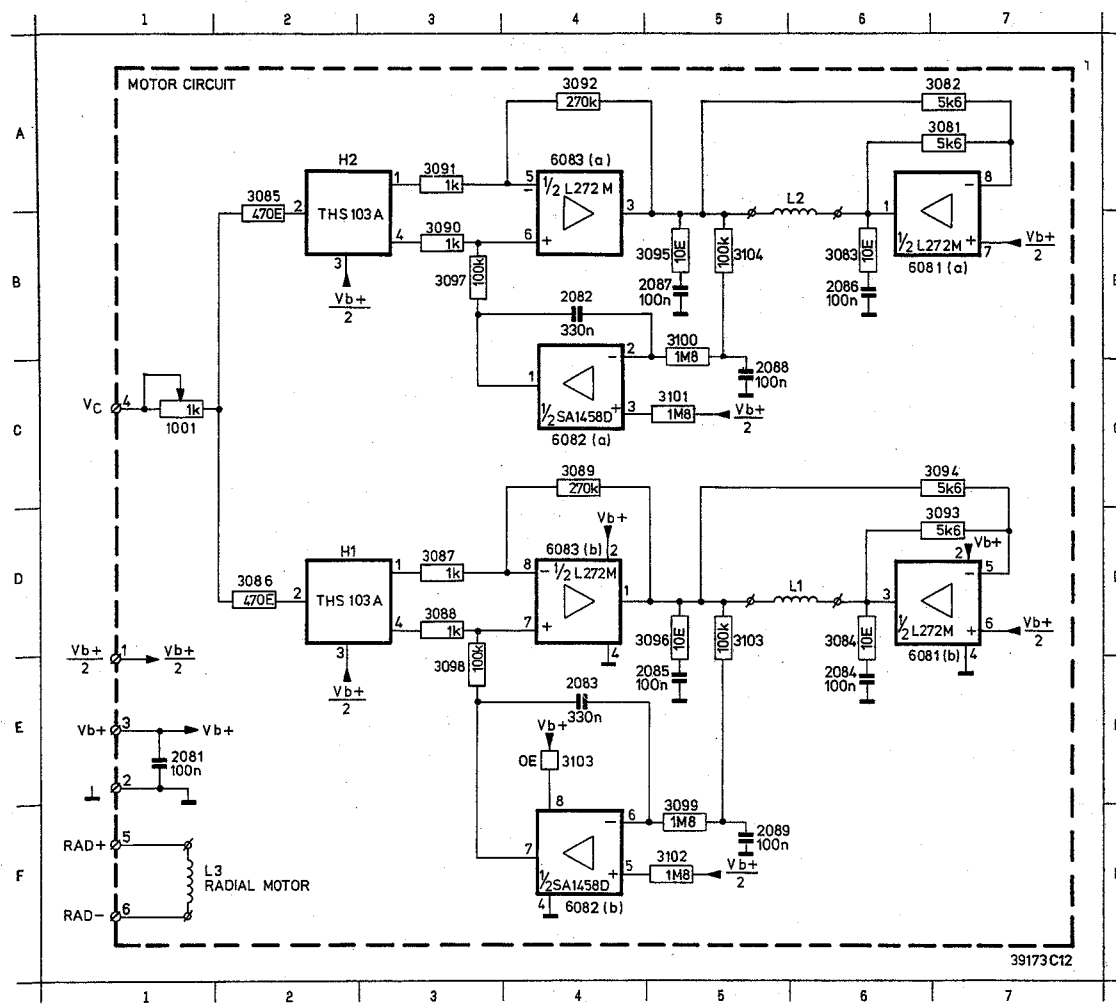


Fig. 5

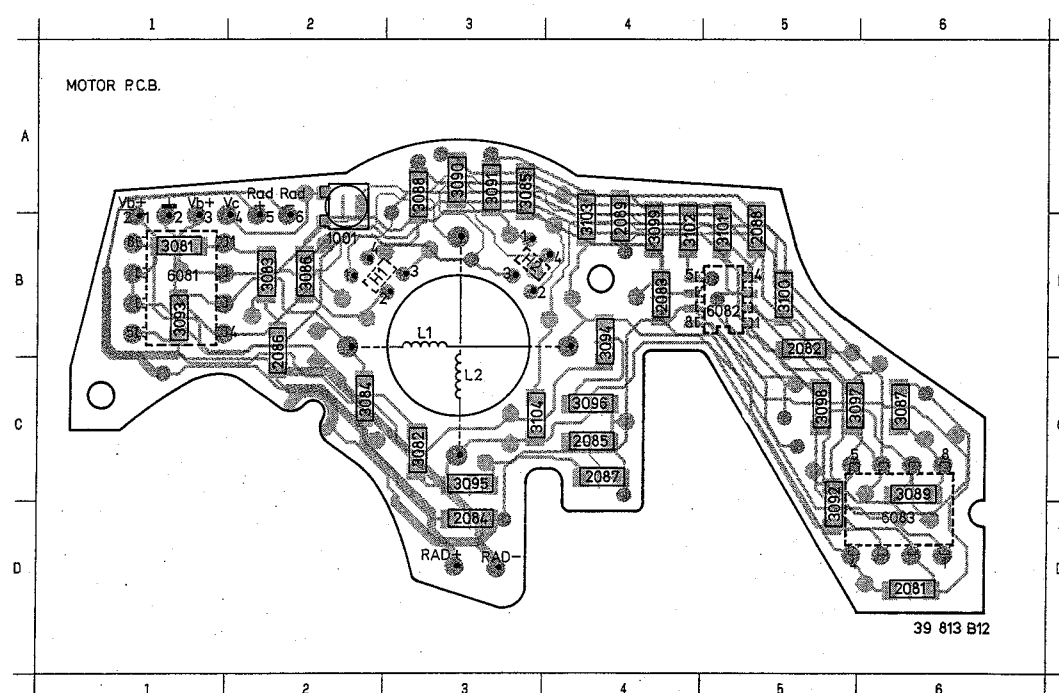
- 4 Bij $V_c = -0,9\text{ V} \pm 0,1\text{ V}$ moet het toerental 600 t/min zijn.
De signalen hebben dan een frequentie van ongeveer 30 Hz.
- Schakel de speler uit en sluit nu van de oscilloscoop kanaal A aan op pin 1 van IC 6081(a) en kanaal B op pin 3 van IC 6081(b).
 - Herhaal de punten 1 t/m 4.
 - Verlaag V_c nu tot $-0,3\text{ V}$.
Bij deze spanning moet de motor nog "goed" draaien.
 - Wanneer al deze voorwaarden aanwezig zijn kan aangenomen worden dat de motor en de print in orde zijn.
Als de punten 3 en 4 niet in orde zijn of de motor bij $-0,3\text{ V}$ niet meer goed draait dan zal de gehele motor, dit zijn de pos. 61 t/m 67, moeten worden vervangen.

1001	C 1	2085	E 5	3081	A 7	3086	D 2	3091	A 3	3096	D 5	3101	C 5	6081	B 6	6083	D 4
2081	E 1	2086	B 6	3082	A 7	3087	D 3	3092	A 4	3097	B 3	3102	C 5	6081	D 6		
2082	B 4	2087	B 5	3083	B 6	3088	D 3	3093	D 7	3098	C 4	3103	C 4	6082	C 4		
2083	E 4	2088	C 5	3084	D 6	3089	C 4	3094	B 5	3099	B 5	3104	B 5	6082	F 4		
2084	F 6	2089	F 5	3085	A 2	3090	B 3	3095	B 5	3100	B 5	3104	B 5	6083	A 4		



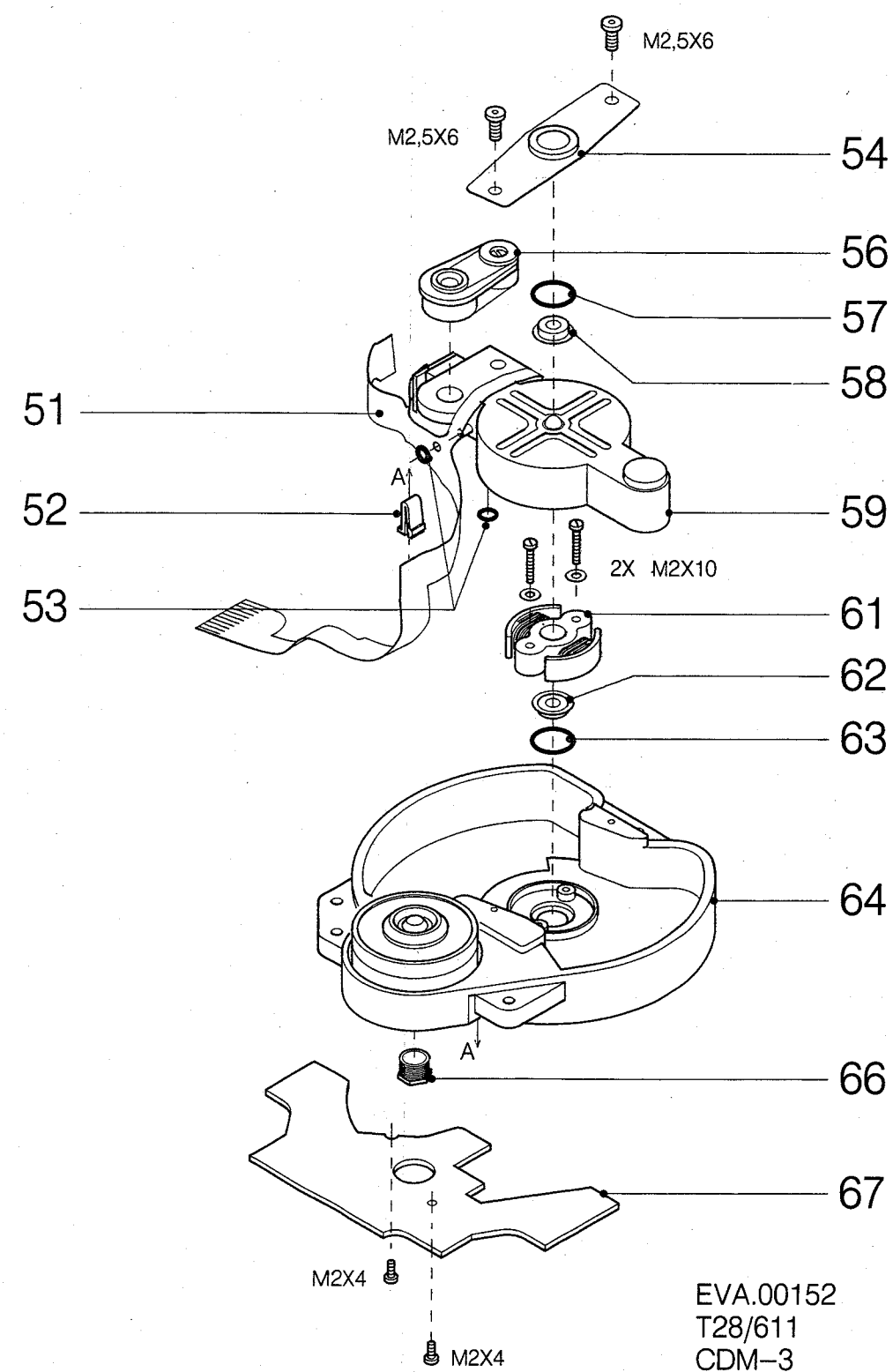
PRS.01570

1001	B 2	2085	C 4	3014	C 4	3085	A 3	3090	A 3	3095	C 3	3100	B 5	6082	B 5
2081	D 6	2086	B 2	3081	B 1	3086	B 2	3091	A 3	3096	C 4	3101	B 5	6083	D 6
2082	B 5	2087	C 4	3082	C 3	3087	C 6	3092	D 5	3097	C 5	3102	B 5		
2083	B 4	2088	B 5	3083	B 2	3088	A 3	3093	B 1	3098	C 5	3103	B 4		
2084	D 3	2089	B 4	3084	C 2	3089	C 6	3094	B 4	3099	B 4	6081	B 1		



PRS.01569

EXPLODED VIEW



Pos.	Code number
51	4822 323 50116
52	4822 401 10948
53	4822 530 50876
54	4822 520 10601
56,59	4822 691 30179
57	4822 530 50864
58	4822 520 20429
61+67	4822 361 20678
66	4822 502 12529

EVA.00152
T28/611
CDM-3

ELECTRICAL PARTS

		
6081	L272M	4822 209 82374
6082	SA1458D	4822 209 11346
6083	L272MB	4822 209 70373

SERVICE HULPMIDDELEN

Audio testplaat	4822 397 30085
Plaat zonder defecten + plaat met DO-fouten, zwarte spots en vingerafdrukken	4822 397 30096
Torx schroevendraaiers:	
- set (recht)	4822 395 50145
- set (haaks)	4822 395 50132
Aandrukker	4822 404 20725
Glazen plaat	4822 395 90204

Chips 50 V NP0 S1206			Chips 0,125 W S1206			Chips 0,125 W S1206			1R
1 pF	5%	4822 122 32479	5,6 E	5%	4822 111 90394	7,5 k	2%	4822 111 90276	
1,5 pF	5%	4822 122 31792	6,2 E	5%	4822 111 90395	8,2 k	2%	5322 111 90118	
1,8 pF	5%	4822 122 32087	6,8 E	5%	4822 111 90254	9,1 k	2%	4822 111 90373	
2,2 pF	5%	4822 122 32425	7,5 E	5%	4822 111 90396	10 k	2%	4822 111 90249	
3,3 pF	5%	4822 122 32079	8,2 E	5%	4822 111 90397	11 k	2%	4822 111 90337	
3,9 pF	5%	4822 122 32081	9,1 E	5%	4822 111 90398	12 k	2%	4822 111 90253	
4,7 pF	5%	4822 122 32082	10 E	2%	5322 111 90095	13 k	2%	4822 111 90509	
5,6 pF	5%	4822 122 32506	11 E	2%	4822 111 90338	15 k	2%	4822 111 90196	
8,2 pF	5%	4822 122 32083	12 E	2%	4822 111 90341	16 k	2%	4822 111 90346	
10 pF	5%	4822 122 31971	13 E	2%	4822 111 90343	18 k	2%	4822 111 90238	
12 pF	5%	4822 122 32139	15 E	2%	4822 111 90344	20 k	2%	4822 111 90349	
18 pF	5%	4822 122 31769	16 E	2%	4822 111 90347	22 k	2%	4822 111 90251	
22 pF	10%	4822 122 31837	18 E	2%	5322 111 90139	24 k	2%	4822 111 90512	
27 pF	5%	4822 122 31966	20 E	2%	4822 111 90352	27 k	2%	4822 111 90542	
33 pF	5%	4822 122 31756	22 E	2%	4822 111 90186	30 k	2%	4822 111 90216	
39 pF	5%	4822 122 31972	24 E	2%	4822 111 90355	33 k	2%	5322 111 90267	
47 pF	5%	4822 122 31772	27 E	2%	5322 111 90105	36 k	2%	4822 111 90514	
56 pF	5%	4822 122 31774	30 E	2%	4822 111 90356	39 k	2%	5322 111 90108	
68 pF	5%	4822 122 31961	33 E	2%	4822 111 90357	43 k	2%	4822 111 90363	
82 pF	10%	4822 122 31839	36 E	2%	4822 111 90359	47 k	2%	4822 111 90543	
100 pF	5%	4822 122 31765	39 E	2%	4822 111 90361	51 k	2%	5322 111 90274	
120 pF	5%	4822 122 31766	43 E	2%	5322 116 90125	56 k	2%	4822 111 90573	
150 pF	5%	4822 122 31767	47 E	2%	4822 111 90217	62 k	2%	5322 111 90275	
180 pF	2%	4822 122 31794	51 E	2%	4822 111 90365	68 k	2%	4822 111 90202	
220 pF	5%	4822 122 31965	56 E	2%	4822 111 90239	75 k	2%	4822 111 90574	
270 pF	5%	4822 122 32142	62 E	2%	4822 111 90367	82 k	2%	4822 111 90575	
330 pF	10%	4822 122 31642	68 E	2%	4822 111 90203	91 k	2%	5322 111 90277	
390 pF	5%	4822 122 31771	75 E	2%	4822 111 90371	100 k	2%	4822 111 90214	
470 pF	5%	4822 122 31727	82 E	2%	4822 111 90124	110 k	2%	5322 111 90269	
560 pF	5%	4822 122 31773	91 E	2%	4822 111 90375	120 k	2%	4822 111 90568	
680 pF	5%	4822 122 31775	100 E	2%	5322 111 90091	130 k	2%	4822 111 90511	
820 pF	5%	4822 122 31974	110 E	2%	4822 111 90335	150 k	2%	5322 111 90099	
1 nF	10%	5322 122 31647	120 E	2%	4822 111 90339	160 k	2%	5322 111 90264	
1,2 nF	5%	4822 122 31807	130 E	2%	4822 111 90164	180 k	2%	4822 111 90565	
1,5 nF	10%	4822 122 31781	150 E	2%	5322 111 90098	200 k	2%	4822 111 90351	
1,8 nF	10%	4822 122 32153	160 E	2%	4822 111 90345	220 k	2%	4822 111 90197	
2,2 nF	10%	4822 122 31644	180 E	2%	5322 111 90242	240 k	2%	4822 111 90215	
2,7 nF	10%	4822 122 31783	200 E	2%	4822 111 90348	270 k	2%	4822 111 90302	
3,3 nF	10%	4822 122 31969	220 E	2%	4822 111 90178	300 k	2%	5322 111 90266	
3,9 nF	10%	4822 122 32566	240 E	2%	4822 111 90353	330 k	2%	4822 111 90513	
4,7 nF	10%	4822 122 31784	270 E	2%	4822 111 90154	360 k	2%	4822 111 90515	
5,6 nF	10%	4822 122 31916	300 E	2%	4822 111 90156	390 k	2%	4822 111 90182	
6,8 nF	10%	4822 122 31976	330 E	2%	5322 111 90106	430 k	2%	4822 111 90168	
10 nF	10%	4822 122 31728	360 E	1%	4822 111 90288	470 k	2%	4822 111 90161	
12 nF	10%	5322 122 31648	360 E	2%	4822 111 90358	510 k	2%	4822 111 90364	
15 nF	10%	4822 122 31782	390 E	2%	5322 111 90138	560 k	2%	4822 111 90169	
18 nF	10%	4822 122 31759	430 E	2%	4822 111 90362	620 k	2%	4822 111 90213	
22 nF	10%	4822 122 31797	470 E	2%	5322 111 90109	680 k	2%	4822 111 90368	
27 nF	10%	4822 122 32541	510 E	2%	4822 111 90245	750 k	2%	4822 111 90369	
33 nF	10%	4822 122 31981	560 E	2%	5322 111 90113	820 k	2%	4822 111 90205	
47 nF	10%	4822 122 32542	620 E	2%	4822 111 90366	910 k	2%	4822 111 90374	
56 nF	10%	4822 122 32183	680 E	2%	4822 111 90162	1 M	2%	4822 111 90252	
100 nF	10%	4822 122 31947	750 E	2%	5322 111 90306	1,1 M	5%	4822 111 90408	
180 nF	10%	4822 122 32915	820 E	2%	4822 111 90171	1,2 M	5%	4822 111 90409	
			910 E	2%	4822 111 90372	1,3 M	5%	4822 111 90411	
			1 k	2%	5322 111 90092	1,5 M	5%	4822 111 90412	
			1,1 k	2%	4822 111 90336	1,6 M	5%	4822 111 90413	
			1,2 k	2%	5322 111 90096	1,8 M	5%	4822 111 90414	
			1,3 k	2%	4822 111 90244	2 M	5%	4822 111 90415	
			1,5 k	2%	4822 111 90151	2,2 M	5%	4822 111 90185	
			1,6 k	2%	5322 111 90265	2,4 M	5%	4822 111 90416	
			1,8 k	2%	5322 111 90101	2,7 M	5%	4822 111 90417	
			2 k	2%	4822 111 90165	3 M	5%	4822 111 90418	
			2,2 k	2%	4822 111 90248	3,3 M	5%	4822 111 90191	
			2,4 k	2%	4822 111 90289	3,6 M	5%	4822 111 90419	
			2,7 k	2%	4822 111 90569	3,9 M	5%	4822 111 90421	
			3 k	2%	4822 111 90198	4,3 M	5%	4822 111 90422	
			3,3 k	2%	4822 111 90157	4,7 M	5%	4822 111 90423	
			3,6 k	2%	5322 111 90107	5,1 M	5%	4822 111 90424	
			3,9 k	2%	4822 111 90571	5,6 M	5%	4822 111 90425	
			4,3 k	2%	4822 111 90167	6,2 M	5%	4822 111 90426	
			4,7 k	2%	5322 111 90111	6,8 M	5%	4822 111 90235	
			5,1 k	2%	5322 111 90268	7,5 M	5%	4822 111 90427	
			5,6 k	2%	4822 111 90572	8,2 M	5%	4822 111 90237	
			6,2 k	2%	4822 111 90545	9,1 M	5%	4822 111 90428	
			6,8 k	2%	4822 111 90544	10M	5%	5322 111 91141	
0 E	jumper	4822 111 90163							
1 E	5%	4822 111 90184							
1,1 E	5%	4822 111 90377							
1,2 E	5%	4822 111 90378							
1,3 E	5%	4822 111 90379							
1,5 E	5%	4822 111 90381							
1,6 E	5%	4822 111 90382							
1,8 E	5%	4822 111 90383							
2 E	5%	4822 111 90384							
2,2 E	5%	5322 111 90104							
2,4 E	5%	4822 111 90385							
2,7 E	5%	4822 111 90386							
3 E	5%	4822 111 90387							
3,3 E	5%	4822 111 90388							
3,6 E	5%	4822 111 90389							
3,9 E	5%	4822 111 90391							
4,3 E	5%	4822 111 90392							
4,7 E	5%	5322 111 90376							
5,1 E	5%	4822 111 90393							